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The University of Cape Town

School of Economics



**Applying Fuzzy – Set Theoretic
Poverty Measures within a
Developmental Local Government
Context: The Khayelitsha – Mitchell's
Plain Case Study**

By

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A paper presented in partial fulfilment of the requirement for ECO 500 W Economics
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The usual disclaimer applies.

ABBREVIATIONS

ATG – Augmented Theory of the Good

CL – Cheli and Lemmi

CPM – Capabilities Poverty Measure

CT – Cape Town

CZ – Cerioli and Zani

DFA – Development Facilitation Act

DLG - Developmental Local Government (DLG)

FGT – Foster, Greer and Thorbecke

GEAR - Growth, Employment and Redistribution Programme

GPI – Global Poverty Index

H – Headcount Index

HC – Human Capital

H-S – Housing & Services

HDI – Human Development Index

HH - Household

HHCI – Household Circumstance Index

HHII – Household Infrastructure Index

ID – Industrial Decentralisation

IDP – Integrated Development Programme

IGP – Index of Global Poverty

KMP – Khayelitsha – Mitchell’s Plain Magisterial District

KZN – Kwazulu Natal

LDOs – Land Development Objectives

LG – Local Government

LGTA – Local Government Transition Act

MDL - Minimum Decent Life

Mf – membership function

NGO – Non – Governmental Organisation

PC – Presidential Council

PDC – Provincial Development Council

PG – Poverty gap ratio

QoL – Quality of Life

RDP - Reconstruction and Development Plan (RDP)

RSC - Regional Services Council (RSC)

SA – South Africa

SALDRU – South African Labour Development Research Unit

S-E – Socio-Economic

SST – Sen – Shorrocks – Thon Index

TFR – Total, Fuzzy and Relative

TLC – Transitional Local Council

TVTGT – Thick Vague Theory of the Good

UNDP – United Nations Development Programme

V_{CL} – The Cheli & Lemmi fuzzy measure

V_{CZ} – The Cerioli and Zani fuzzy measure

WC – Western Cape

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ABSTRACT: This paper attempts to demonstrate the importance of the linkage between the presence of poverty and the nature of governance, something largely omitted from poverty studies in South Africa. The context of this investigation was the establishment of the new local government model (i.e. Developmental Local Government), which puts governance at the forefront of addressing poverty effectively. The new governance model adopts a multidimensional poverty paradigm in its Integrated Development Planning (IDP). However, in this study we have examined whether the approach adopted (i.e. Basic Needs) is necessarily the best multidimensional approach available. We have given preference to the capabilities approach with its emphasis on well-being where people are the beneficiaries of development rather than the basic needs approach where the emphasis is on goods and services as a means to good life. Sen's Capabilities Approach was operationalised by adopting a relatively new methodology (i.e. fuzzy-set theoretic poverty measures) for measuring multidimensional poverty in the Khayelitsha – Mitchell's Plain (KMP) magisterial district using the Census 2001 dataset. Our results show that unemployment, housing and low incomes need the most attention in KMP. Furthermore, the fuzzy-set measures, which view poverty as opaque and vague, yield more detailed policy information, thus preventing the single-policy response dominating many IDPs at present. As a medium term policy response, it is suggested that the implementation of the extended public works programme in KMP has the potential to significantly address both the material and non-material capability failure existing in KMP.

INTRODUCTION

The primary objective of development is to improve the well-being of people. Poverty, however, is the major obstacle achieving this goal. To address the issue of poverty successfully, one first has to provide a proper *notion* of poverty before the relevant poverty measures can be employed. This is vital from a policy perspective especially from a targeting point of view where information on who is poor and what this means is needed. Over the years different frameworks have been used to analyse the issue of poverty. At one time Welfarism was especially popular and during the 1980s the basic needs approach gained currency¹. Much of the literature in South Africa utilises the uni-dimensional income/expenditure-based poverty measures, implying a welfarist framework. Of late, researchers have combined these income/expenditure measures with other important indicators of deprivation². However with the promulgation of the Development Facilitation Act (DFA) (1995), the South African government has signalled that all its interventions are to be based on the multi-dimensional nature of poverty³. The DFA (1995) began a process of establishing local government structures that could implement this new approach to dealing with poverty. This new local government model, called *developmental local government*, has been tasked by government to carry out its developmental mandate. One of the ways it hopes to achieve this is through Integrated Development Plans (IDPs). Each municipality and magisterial district is required to draft such a plan, showing how they hope to go about addressing poverty issues. An interesting additional feature of this new municipal model is its emphasis on *broadening* and *deepening* democracy through public participation and accountability. These values, expressing a desire to establish principles of good governance, were recognised by the UNDP's Human Development Report (2002) as being the "missing link" in the fight against poverty.

Although the IDP tackles poverty by adopting a basic needs approach, is this necessarily the best multi-dimensional approach available? Over the years, besides the basic needs approach, numerous attempts have been made to develop a more comprehensive

¹ Welfarism refers to the evaluation by the individual of his/her well-being. The basic needs approach on the other hand, is based on identifying key socio-economic indicators, which represent the components of poverty. The basic needs approach is thus considered to be 'multi-faceted' or 'multi-dimensional', whereas the Welfarist approach is considered to be uni-dimensional since it defines poverty in terms of only one criterion, namely income / expenditure. A more comprehensive discussion of these key concepts follows in chapter IV.

² See Bhorat *et al* (2001) for a comprehensive overview of these methods.

³ The DFA started off the process of re-defining the traditional administrative role of municipalities, by equipping them with the legislative tools to act as service-delivery entities. Chapter III contains a more extensive discussion of the various laws that constitute the framework for the *Developmental Local Government* model.

theoretical framework for understanding and hence measuring poverty. The most rigorous and appealing have been Sen's capabilities approach (See Sen, 1983, 1984, 1985, 1999). As frequently happens with such a significant theoretical development, a methodological adjustment is needed, but this is neither immediate nor automatic (Costa, 2002). Some recent attempts have been made in South Africa to develop multi-dimensional measures of poverty based on Sen's framework (See Klasen, 2000, May *et al*, 1995, May, 1998). Most of these attempts have suffered from a lack of methodological focus. However, recently Qizilbash (2002) and Clark and Qizilbash (2003) were the first to seriously explore the use of *fuzzy-set poverty measures*, which use a multidimensional approach combined with vagueness of dimensions and admissible cut-off levels in a South African context⁴. These new poverty measures are an attempt to operationalise Sen's capabilities approach. In this paper we use fuzzy – set poverty measures within a capabilities approach paradigm and test it using the Census 2001 dataset. The Khayelitsha – Mitchell's Plain magisterial district is, after Murraysburg, the poorest in the Western Cape and the existence of this new dataset presents us with a unique opportunity to do some preliminary work to examine key dimensions of poverty within an area (i.e. KMP) at present undergoing the process of drawing up an IDP plan.

The value of this research lies in presenting a new and relatively untested approach to understanding and measuring poverty in South Africa. It also hopes to provide useful information to the present magisterial district authorities in assisting them to draw up their IDP plan by helping to identify key socio-economic needs within the broader community.

The paper is organised as follows: Chapter I examines the evolution of local government in South Africa. It attempts to outline the dynamic forces that led to the changes in local government. It also attempts to map labour market effects, which have played a crucial role in the creation of contemporary 'human poverty'. Chapter II examines the government's two foundational socio-economic reconstruction plans. They are the Reconstruction and Development Plan (RDP) and the Growth, Employment and Redistribution Plan (GEAR). The aim is to outline the macroeconomic context of government's thinking and the possible constraints and enabling factors that will govern any micro plans for poverty alleviation.

⁴ Fuzzy set poverty measures is an application of Fuzzy Set Theory. This modified set theory is relatively new and was initiated by L.A Zadeh when he first published a paper in 1965 entitled 'Fuzzy Sets'. Fuzzy set poverty measures conceptualize poverty as a vague notion. Thus these measures assume a formal lack of precision when modeling poverty. Chapter V contains a more extensive discussion of this methodology.

Chapter III introduces the new *developmental local government* model. The relevant legislation pertaining to this model will be discussed and the two waves of IDP implementation will be evaluated. Chapter IV interrogates the existing literature pertaining to the conceptualisation of well-being and poverty. Various theories in this area are examined. Here we are interested in which of the existing theories best explain the complexity and dynamic nature of poverty in recent times.

Chapter V introduces the various methodological approaches employed in the analysis of measuring poverty. Here we examine the various methods adopted within the South African context and also provide a critique of these methods. At the same time, we offer an exposition of the latest methodological approach, that is fuzzy-set poverty measures, and show how it can answer some of the outstanding issues within the methodological field.

Chapter VI begins our empirical analysis. Here we start out by defining the demographic context and situation of the KMP area and the necessity for an IDP plan. In Chapter VII we apply our methodological framework to the KMP magisterial district by using the Census 2001 dataset. Chapter VIII concludes our discussion.

CHAPTER I

EVOLUTION OF LOCAL GOVERNMENT IN SOUTH AFRICA (1948 – 1994)

1.1 INTRODUCTION

Locating poverty within its historical context and tracing its evolution removes the arbitrariness and superficiality from which contemporary poverty analysis would otherwise suffer. In the following discussion we therefore examine developments in local government during the period 1948 – 1994 with an emphasis on how certain social, political and economic forces have contributed to the widespread poverty prevalent in most of South Africa today. More specifically, some of the questions we are interested in are why is it that poverty is largely geographically located in South Africa where nearly two thirds of those who are poor, reside in rural areas; what historical reasons are there that explain why Africans have such low skills and education levels; why is there such a high economically active population that can't find work in the formal sector; how has the role of local government changed over time to address the socio-economic challenges with which it has been confronted?

1.2 TRADITIONAL APARTHEID POLICY (1948 – 1973)

The process of African urbanization is a key dynamic that challenged territorial arrangements within the segregated urban spaces. The first wave of African urbanization occurred during the early period of the twentieth century and was driven by the increasing need for cheap labour on the gold mines in the Witwatersrand, resulting in the levying of the hut and poll taxes on African rural communities. In 1923 the Urban Areas Act was promulgated as a mechanism to control the growing settlement of Africans close to white areas (Sadiki, 2000). This Act thus entrenched separation between areas of settlement for Africans and the rest of the urban environment twenty-five years before '*Apartheid proper*'.

The second wave of African urbanization occurred from the 1950s onwards and was mainly driven by the effects of Apartheid policies⁵. These policies created the framework for the establishment of Black nation states/ homelands. These homelands were semi-

⁵ Africans living in urban areas increased from 27, 2 % in 1951 to 31, 8 % in 1960 and 33, 1 % in 1970. Ironically some Apartheid policies (such as the influx control and pass laws) aimed specifically at curbing the growing African urbanisation, but the deteriorating socio-economic conditions in the homelands, drove them to the urban areas in increasing numbers (Terblanche, 2002).

autonomous and acted as a political tool for Africans to exercise their political aspirations (Bhorat *et al*, 2001). Settled African communities became broken up and relocated in the homelands. The new communities living in the homelands faced economic restrictions with limitations being placed on the number of livestock owned coupled with the poor quality of farmland. Thus, according to May (1998), these relocation policies had the effect of destroying social cohesion in black communities and stripping them of their physical assets, thus causing loss of vital resources that families could have used to generate a living.

In the urban areas, the Group Areas Acts (of 1950 & 1966) proclaimed the inner city and the suburbs as spaces for white settlement only whilst the outer wedges of land were set aside for African townships (Sadiki, 2000). These Africans (in the urban areas) became classified as politically rightless. They were nevertheless given temporary residential rights conditional on them remaining economically active. Urban Africans were also 'favored' with preferential access (over immigrants) for jobs located in the urban areas⁶ (May, 1998). The Group Areas Acts and other Apartheid policies thus attempted to carry out the recommendations made by the Sauer Commission in 1947, which was to slow and eventually reverse the movement of Africans into the urban areas (Hindson, 1987). Influx control in the form of pass laws were implemented in an attempt to achieve this objective.

Apartheid policies also had a number of important labour market implications during this period. May (1998) argues that the fundamental (economic) premise of Apartheid was the extraction of cheap labour. During the 1950s several labour laws were passed bringing the goal of cheap labour closer to fruition (Bhorat *et al*, 2001). These laws had the effect of limiting Africans in several crucial ways:

1. Africans were only allowed to perform unskilled work
2. Trade union formation and any labour action was expressly prohibited
3. African education was tied to revenues received from the African tax base, thus curtailing their ability to acquire human capital and increasing their wages

These labour policies, which created an abundant supply of cheap labour, coupled with a fixed gold price, which ensured government a stable income, had a stimulatory effect on the economy. Thus during the period 1961 – 1970 economic growth exceeded 5 % per annum. Whilst aggregate demand increased rapidly during this boom, factories started moving to a more capital-intensive production process. This created a need for more

⁶ During the early stages of Apartheid, the government attempted to stratify the African workforce between those residing in urban areas (i.e. on the periphery of the cities) and the immigrant population, coming from the homelands to seek work. This policy is commonly referred to as the insider – outsider strategy.

skilled labour. However with a shortage of whites to fill all the skilled jobs, the colour bar was subsequently raised, with blacks allowed to perform the 'unskilled' component of 'white' jobs⁷.

1.3 APARTHEID UNDER DURESS (1973 – 1985)

During the second wave of African urbanization the local governments in major metropolitan areas were unsuccessful in their attempts to prevent the inflow of rural immigrants into the towns and cities, in search of employment and possibly a brighter future. Whilst the economy was still performing well, the rural immigrants could still be accommodated in the cities. However during the 1970s, a combination of political (Soweto uprising, 1976 & wildcat strikes, 1973) and economic (oil shocks in 1973 & 1979) factors brought economic growth to a grinding halt. These politico – economic factors together with an incentive structure that favored capital over labour (e.g. negative real interest rates, tax concessions on capital and overvalued exchange rates) caused an increase in unemployment in the metropolitan and urban areas (Bhorat *et al*, 2001).

Under pressure to do something, the government established the Wiehahn and Riekert Commissions in 1979 (Cobbett, 1987). Their brief was to investigate the nature of the prevailing state of affairs and recommend ways of remedying the situation. The Riekert Commission acknowledged that the prevailing political situation was untenable and thus recommended that African town dwellers be given permanent residence and be allowed to move to urban areas in search of work. Government met these recommendations with a lukewarm response⁸. The Wiehahn commission on the other hand examined the question of worker formation and job reservation. They recommended the drafting of legislation that would scrap job reservation and make African trade unions permissible (Bhorat *et al*, 2001).

Although some of the recommendations of the Wiehahn commission were implemented (e.g. Africans permitted to form trade unions), the government nevertheless went ahead to salvage what was left of its plans of spatial separation. It's response was an aggressive *Industrial Decentralization* (ID) policy, which attempted to address the political and economic turmoil whilst simultaneously maintaining the status quo (i.e. spatial separation). The ID policy was implemented in deconcentrated zones. These deconcentrated zones were industrial areas situated between the Bantustans and white

⁷ This discussion draws on Bhorat *et al* (2001)

⁸ See Horner (1983) "Labour Preference, Influx control and Squatters: Cape Town Entering the 1980s" for a more detailed discussion on this issue.

residential areas. Adjustments were made to high business standards existing in metropolitan areas and wages were made flexible (Hindson, 1987).

The establishment of growth poles in underdeveloped regions was another key government programme that complemented the ID policy in its attempt to get the economy off the ground. Government provided companies willing to settle in the growth poles with incentives and tax breaks. The primary rationale for establishing growth poles rests on the belief that the majority of benefits will spread throughout the region and improve the standard of living for the majority of people (Dewar, 1987).

1.4 THE CLOSING STAGE OF APARTHEID (1985 – 1994)

In 1985, the President's Council, an important advisory body, produced a report entitled "*An Urbanisation Strategy for the Republic of South Africa*" (Hindson, 1987). This report was prompted by the failure of the Riekert commission. The report recommended the abandonment of territorial segregation and confirmed that African urbanization was both inevitable and desirable. Any future government involvement in this process should only be to ensure that it took place in a controlled way.⁹ This shift implied that policies such as influx control and the pass laws were no longer required and it opened the way for these policies to be removed from the statute books¹⁰. The South African landscape was once again radically redrawn. The framework of Orderly Urbanisation comprised two spatial units – developmental regions and metropolitan areas (Hindson, 1987). There were in all nine developmental regions, some cutting across homeland boundaries. At a local government level, Regional Services Councils (RSC) were established. The RSCs set out to achieve three objectives:

- Begin redistributing resources from white to black areas
- Take over service provision from the state
- Encourage businesses to move to the decentralized areas by imposing penalties in the form of taxes on turnover and labour costs.

The first major challenge for the newly established RSC's was to find ways in which they could come up with the necessary revenue to fund services in black areas. The RSCs eventually took the decision to remove subsidies on service provision and privatise housing in the townships. This left many households exposed to the risk of being evicted because tenants were unable to afford the higher service charges (Hindson, 1987). The policy of orderly urbanisation therefore transferred the costs of urbanisation from the employers onto the working class. RSC's however failed to achieve their stated

⁹ This policy was known as 'Orderly Urbanization'.

¹⁰ A year after the publication of the PC report, influx control was eventually abolished.

objectives because they suffered from a legitimacy crisis due to their undemocratic nature (Cobbett, 1987).

The political pressure and turmoil of the late 1980s eventually began to take its toll on the Apartheid government. The beginnings of a full-scale negotiation process were set in motion in 1990 and in 1993 the framework for the new local government structure (i.e. The Local Government Transition Act (LGTA)) was established (Green Paper on Local Government, 1997). It was envisaged that the new local government structure would go through two interim phases.

- (i.) *Pre - Interim phase*: local forums would be established during this phase and they would appoint temporary councils, which would govern municipalities until the local elections in 1995.
- (ii.) *Interim Phase*: this phase would begin with the local municipal elections in 1995/6 and leading to the introduction of the new local government system in 1999.

1.5 CONCLUSION

The period 1948 – 1994 represented a tumultuous era of social, economic and political upheaval in the history of South Africa. The brief survey of this period above suggests that institutional policies of Apartheid, such as its re-location policies, restrictions on labour market access, confiscation of productive assets, coupled with influx controls and pass laws all contributed to the severe state of poverty and unemployment which continues to plague South Africa today.

CHAPTER II

ECONOMIC POLICIES OF POST APARTHEID SOUTH AFRICA (1994 – 2003)

2.1 INTRODUCTION

When the new government took over the reigns of leadership in 1994, two programmes formed the basis of their socio-economic plan to reconstruct and rebuild the country. These programmes were *the Reconstruction and Development Plan (RDP)* and the *Growth, Employment and Redistribution Programme (GEAR)*. They formed the foundation upon which all other government policies and programmes were formulated. There are therefore three reasons why it is important to examine the RDP and GEAR: (i) these two key policies inform us of government thinking on important areas of socio-economic development such as poverty, growth and principles that govern the approach to economic renewal (ii) the fundamental principles of the RDP have been absorbed into micro policies and programmes, especially those related to local government. (iii.) these policies inform us of the underlying assumptions that government holds towards poverty.

2.2. RDP

The socio-economic and developmental objectives of the ANC were first published in a document entitled '*The Reconstruction and Development Programme*' (RDP, 1994). According to this document, there were 17 million people living in poverty in 1994. The vast majority of the poor (approximately eleven million) lived in rural areas (RDP, 1994). The RDP set out to improve the quality of life of all South Africans, particularly those living in the poorest areas. The RDP project rested on three pillars. First it defined six basic principles, spelling out the characteristics embodying the RDP project. Second the RDP defined the objectives it wished to achieve. These were specified as key programmes in the RDP document. Finally, strategies were spelt out that would operationalise the various programmes, most importantly that of meeting *basic needs*.

The 6 Basic Principles of the RDP were:

- *Integrated and sustainable programmes*: by harnessing resources in a synergistic manner

- *People –Driven process*: People considered most important resource and expected to be the key driver in the process of meeting their basic needs.
- *Peace and Security*
- *Nation – Building*
- *Linking Reconstruction and Development*: this entails meeting the basic needs of communities and modernizing the economy whilst promoting human resource development. This socio – economic strategy was expected to increase output in all sectors of the economy.
- *Democratization of South Africa*

The RDP also focused on five key programmes:

- Meeting basic needs
- Developing Human Resources (HR)
- Building the economy
- Democratising the state and society
- Implementing the RDP

(Source: RDP, 1994)

For the goals and objectives espoused in the RDP document to be achieved, certain conditions needed to be met. Le Roux (1996) mentions that historically, the failure of the social democracies was due primarily to a drop in the rate of economic growth and rising unemployment in these countries.¹¹ Le Roux (1996) posits from these initial insights, that the goals of the RDP can only be achieved (within the specified period of time) if there is both rapid economic growth and (human) development, which in turn is dependent on overcoming poverty-related problems. According to this understanding, productive benefits can thus be obtained by equipping people with the necessities for their daily life. For example with the electrification of a village, household members have a better chance of acquiring human capital with possibilities for either studying or reading whereas before this might not have been possible.

2.3 DEMISE OF THE RDP

The RDP program was an ambitious attempt at improving the living conditions of the poor through better access to basic physical and social services, health, education and training. From the outset, the RDP encountered problems stemming *inter alia* from the centralization of decision-making and tight delivery goals. Eventually, constrained by

¹¹ It's worth mentioning that since its inception, the new South Africa has tried fashioning itself on a modern capitalist state. The RDP though brings in a strong element of state intervention.

institutional weaknesses, failure to control development planning from the centre and inability to link delivery at national and provincial levels, the RDP office was closed down in 1996 and the responsibility for its implementation was transferred to the office of then deputy – president, Thabo Mbeki.

2.4 GEAR

In 1996, government tabled their long-awaited macroeconomic policy, Growth Employment and Redistribution (GEAR). The primary focus of the GEAR document was to achieve growth through greater export-competitiveness, growing foreign investment, productivity improvements, freeing international trade and improvements in education. A number of policy positions are contained in the GEAR document and its full implementation, GEAR argues, will boost *growth, create jobs and redistribute income* (Heintz & Jardine, 1998). Some of these policies are: deficit reduction, tight monetary policy, trade liberalization and regulated flexibility of the labour market. Government's monetary and fiscal policies are aimed at improving business confidence, encouraging investment, keeping inflation down and maintaining the value of the rand.

2.5 ASSESSMENT OF THE GEAR POLICY

GEAR aims to address problems of poverty through a high growth rate (via an export-led growth strategy). It is envisaged that job creation will be an inevitable spin-off from this accelerated growth and through the trickle –down effect, redistribution to the marginalized will occur. The trickle-down philosophy of the GEAR policy would suggest that as unemployment decreases, poverty would also gradually disappear. To this end, Heintz and Jardine (1998) believe that GEAR should be evaluated in terms of promised effects – job creation, growth and the ability to provide socio-economic rights to people living in South Africa.

Between 1992 and 2002, South Africa had a reported real GDP growth rate of 2.7 % (Mboweni, 2003). To tackle poverty and create employment, the GEAR document forecasts a 5 % growth rate as reasonable. This growth target has not been achieved since the introduction of GEAR, and as Heintz and Jardine (1998) make clear, the high interest rate policy of the late 1990s has hindered growth in the economy. Despite the poor performance on the growth front, the government has nevertheless succeeded in keeping inflation in check¹². The inflation rate during 2000-2001 was only 4.8 % compared to 8.3 % during the previous decade (i.e. 1990 – 2001) (UNDP, 2003).

¹² The inflation rate during 2000-2001 was only 4.8 % compared to 8.3 % during the previous decade (i.e. 1990 – 2001) (UNDP, 2003).

Trade liberalization is another GEAR policy that has not provided the benefits envisaged. Stiglitz (2003: p 80) points out some of the possible problems related to trade liberalization policy. He states:

“... trade liberalization is supposed to allow resources to move from low-productivity protected sectors to high productivity export sectors. But what if export markets in areas of comparative advantage (such as agriculture) are effectively closed or credit is not available (or available at exorbitant interest rates) to create the new export-related jobs? Then workers simply move from low-productivity protected sectors to unemployment”

Heintz and Jardine (1998) suggest that trade liberalization has had a negative impact on jobs and growth in South Africa. They state that once trade was liberalized, cheap imports started replacing domestically produced goods. Free trade meant job losses in the clothing and textiles sector (See Bhorat, 1998). Despite this negative prognosis by Heintz and Jardine (1998), the impact of trade liberalization on employment remain inconclusive (See Edwards, 2002).

2.6 ECONOMIC GROWTH AND POVERTY

GEAR assumes quite fundamentally that poverty reduction is contingent on growth taking place first. A flurry of research focusing on the link between growth and poverty (Datt & Ravallion, 1992, Easterly, 2000, Bigsten and Shimeles, 2003) has been produced in recent times. Between the 1950s and 1975 income per head in developing countries excluding China grew by 3% per year (Streeten *et al*, 1981). However, despite the rate of growth of industrial production and continued general economic growth, not enough employment was created for the rapidly growing labour force, nor were the benefits of growth more widely spread to lower income groups. However in countries such as South Korea, Taiwan, Hong Kong, Singapore and China, rapid growth was combined with a substantial reduction in the number of poor (Streeten *et al*, 1981). Whether there is a clear and systematic relationship between growth and poverty reduction is therefore by no means a definite conclusion. Yet the belief that there is a systematic relationship is the underlying assumption of the GEAR strategy.

This assumption has governed the efforts of many developing countries in their attempts at eradicating poverty in their own countries. During the 1950s, for example, it was believed that via market forces – rising labour demand, higher productivity, higher wages

and lower prices – economic growth would spread its benefits widely and speedily. However, with increasing returns, barriers to entry and unequal distribution of income and assets, Streeten *et al* (1981) concludes that growth gives to those who already have. Stiglitz (2003) makes a similar observation where economies enjoying positive growth have the benefits of growth going disproportionately to those who are better off. It is not yet known whether an export-led growth policy (i.e. GEAR) will lead South Africa to a situation in which market forces will concentrate benefits. However it is a common fact that income levels are extremely skewed in South Africa. According to UNDP (2003) report, South Africa in 1995 had a Gini coefficient of 0.59, indicating a very high level of income inequality. This Gini coefficient is also the sixth highest amongst 65 other middle-income countries in the world.¹³ Given this skewed income distribution, the question that needs to be asked and which Stiglitz (2003: p 80) asks is “what policies need to be followed that will lead to growth and whether these policies will lead to a kind of growth that will improve the welfare of poor people?” Growth is therefore not homogeneous in its effects with the policies that give rise to growth being fundamental in determining what the impact is going to be on poverty. Bigsten and Shimeles (2003: p1) describe these kinds of policies as ones that induce growth that is ‘pro-poor on poverty’. On the empirical side, Datt and Ravallion (1992) report how redistribution in India, at a given mean consumption had a positive effect on economic development. These effects occurred within a positive growth environment. Their findings suggest that redistribution policies with growth are fundamental in achieving any positive reduction in poverty. Bigsten and Shimeles (2003) observe that this growth will need to be substantial if any significant effects on poverty reduction are to occur.

2.7 CONCLUSION

The RDP contains the foundational principles that frame government thinking on socio – economic issues and secondly (and perhaps more importantly), presents an approach (i.e. Basic Needs) to address the widespread poverty in the country. Both these aspects of the RDP have found their way into the new local government model. GEAR makes clear that growth is a key ingredient towards achieving the socio – economic goals that are contained in the RDP. However, the question that needs to be asked is “Can GEAR deliver the kind of growth necessary to support the goals contained in the RDP and that are currently being implemented by local government?” It is hard to say, but the strong impression one gets is that the success or failure of the developmental role of local government will hinge largely on this particular point.

¹³ Namibia registered the highest Gini coefficient (0.7) (measured in 1993) in the world (UNDP, 2003).

CHAPTER III

DEVELOPMENTAL LOCAL GOVERNMENT

3.1 INTRODUCTION

This section introduces the new local government model, *Developmental Local Government* (DLG). The intention of this new model of local government is to reduce and eventually eliminate poverty and at the same time operationalise democratic governance at a decentralized level. This chapter will thus first address the importance of governance and its relationship to development. Laws covering local government will then be examined. DLG adopts a basic needs approach towards combating poverty in the various municipalities. To this end, two waves of IDP implementation that have taken place so far will be studied and problems related to this process will also be discussed.

3.2 GOVERNANCE AND DEVELOPMENT

The nature of governance has rarely been thought of as crucial to realize welfare gains for the poor and aid development (Sadiki, 2000). However, in recent times, development experts have described good governance as the ‘missing link’ to successful growth and economic reform in developing countries (UNDP, 2002). At this stage the question that needs to be asked is ‘What kind of governance structure is best suited to further development?’ With many developing countries now embracing democracy, the debate has moved on and the question that is now confronting development experts is ‘What kind of *democracy* is best suited to further development and improving the well-being of people¹⁴?’

Two modes of democracy, namely *broadening* and *deepening* democracy can be identified. *Broadening* democracy implies taking democracy to as many people as possible, across the widest possible geographical space. This mode of democracy prevents and mediates conflict (UNDP, 2002). *Deepening* democracy on the other hand refers to making democracy operational at all levels of government¹⁵. This implies direct involvement of the public in the actual operations of the different spheres of government.

¹⁴ The UNDP (2002) states that 140 countries have embraced multi – party democracy over the past 15 years.

¹⁵ This is especially applicable at the lowest level, where people have more frequent contact with this sphere of government and decisions that get taken at this level also affect them more directly.

Deepening democracy is held to be an important dimension of development and one of the pre-conditions for substantial poverty reduction (UNDP, 2002). The intuition here is that deepening democracy gives the people, especially the poor, the opportunity to participate in the various democratic processes, ensuring an *accountable* and responsive government (Sadiki, 2000).

The core principles of *public participation* and *accountability* presented by UNDP (2002) in its Human Development Report appear to be a notable and central part of the Reconstruction and Development Plan. Despite the 'demise of the RDP' (Pycroft, 1998) these principles (i.e. public participation & accountability) have found their way into a raft of legislation (DFA, 1995; LGTA, 1996; White paper on Local Government, 1998; Municipal Systems Act, 2000 *inter alia*). The immediate outcome of this flurry of legislation has been the developmental role assigned to local government.¹⁶ The unique nature of the new model embraces socio-economic functions including eradicating poverty, boosting local economic development and creating jobs (Department of Provincial Affairs and Constitutional Development, 2000). Under this new model of governance, lower spheres of government at least theoretically have the ability to influence the activities and decisions of higher spheres of government (Lamont, 2000).

3.3 LEGAL FRAMEWORK OF DLG

An understanding of the legal framework of DLG is important to any evaluation of government's developmental goals.

3.3.1 DEVELOPMENT FACILITATION ACT NO. 67 (1995)

The *Development Facilitation Act* (1995) (DFA) sets out the framework of the new municipal model. According to the DFA, each municipality is responsible for deciding what its developmental goals should be. The act makes provision for the establishment of special *development councils*, charged with the responsibility to coordinate and facilitate *service delivery*, address *poverty alleviation* and initiate *local economic development* initiatives.

The DFA also addresses the important issue of land redistribution and the developmental role it can play. More specifically, the legislation stipulates general principles of how

¹⁶ It has been estimated that by 1998, 140 national and various other laws impact in some or other way on local government (Lamont, 2000).

land development is to occur within urban and rural areas (Pycroft, 1998). A number of key land –related principles established by the DFA include:

- the promotion of the availability of residential land close to employment opportunities
- Making optimal use of existing economic and infrastructural resources
- Correction of apartheid settlement patterns and
- The encouragement of environmentally sustainable land use

The principles mentioned above find practical expression in the formulation of the Land Development Objectives (LDOs). The DFA stipulates that LDOs require municipalities to draw up a medium- term plan outlining how land is to be developed to achieve developmental goals. Before compiling LDOs, information relating to the development needs of the community is first gathered. However, during the time of the LDO process (i.e. in 1998), new municipal boundaries were being demarcated. It therefore became a tricky business to establish what the community needs were because the population of the municipalities changed after the demarcation of the new municipal boundaries. The demarcation process thus exposed the inflexibility of the DFA and showed that it was difficult to allow for incremental readjustment to the LDOs (Pycroft, 1998).

3.3.2 LOCAL GOVERNMENT TRANSITION ACT NO. 12 (LGTA)

The 2nd amendment of the Local Government Transition Act (LGTA) was passed in 1996 and its purpose was to address some of the shortcomings inherent in the DFA. The act stipulated some of the principles that would act as a basis for regulating the developmental role of local government. It also made provision for a strategic planning tool (i.e. Integrated Development Plans) that local government would use in carrying out its developmental mandate. Given the initial problems experienced with the LDOs, the LGTA allowed for greater flexibility than the DFA.

The main criticism leveled at this attempted corrective measure, was that it was not prescriptive enough. Many practitioners wanted better guidelines on how to go about drafting an IDP plan. The LGTA was geared towards allowing municipalities greater flexibility to respond more appropriately to their unique situations. However, despite the putative good intentions in this regard, several documents have since been compiled and published, giving further and more explicit guidelines on how to construct an IDP plan.¹⁷

¹⁷ One such document entitled “IDP: Local Pathways to Sustainable Development in South Africa” (2001) is cited for those who want to pursue further reading about the methodology of constructing an IDP plan.

3.3.3 WHITE PAPER ON LOCAL GOVERNMENT

The White Paper on Local Government (LG) was released in 1998. This policy document concretized municipalities' responsibilities to coordinate all development activities within their jurisdiction (Pycroft, 1998).

According to the White paper on LG (1998), developmental LG has three inter-related characteristics. They are:

- Maximizing social development and economic growth – Creating an environment conducive to job creation
- Democratising development, empowerment and redistribution – requiring involvement of citizens and community structures
- Leading and learning by municipalities

3.4 DLG AND FIGHTING POVERTY: A BASIC NEEDS APPROACH

The Bill of Rights (1996) contains several socio-economic rights to which citizens are entitled. These include housing, health services, water, education and social security. In terms of the Bill of Rights, the state is thus obliged to take reasonable legislative and other steps within its available resources to achieve the realization of these socio-economic rights. The DFA (1995) also makes mention that the basic needs of all citizens should be met (Pycroft, 1998). Fulfilling the basic needs of all citizens is the primary method by which local government sets out to advance the social and economic development of communities (Lamont, 2000). Basic needs therefore include water, electricity, waste disposal, telecommunications and road maintenance. Educational facilities, medical facilities and policing are also further considerations (Sadiki, 2000)¹⁸.

3.5 OPERATIONALISING DLG: INTEGRATED DEVELOPMENT PLANNING (IDP)

Integrated Development Planning (IDP) is the normative framework for development in South Africa and first received mention in the 2nd amendment of the LGTA (1996). An Integrated Development Plan is a 5-year strategic development plan for a municipality. IDPs are the main instruments for local government to implement its developmental goals. The intention is to empower local communities by including them within a participation process. The other main goal is to facilitate the decentralization of decision-making and implement the goals formerly accommodated by the defunct RDP department (Pycroft, 1998).

¹⁸ Refer to chapter IV for a more comprehensive discussion of the Basic Needs Methodology.

At an administrative level, IDP promotes the integration of different sectors in order to realize cost savings and improve service delivery (Young *et al*, 2002). Integration is also envisaged to occur at a spatial level where the poor are not locationally disadvantaged (Lamont, 2000). Once the institutional arrangements are in place, an IDP requires the municipality to perform a 'reality check'. Information is gathered on social, economic, spatial and institutional matters. Once information is gathered, the public are informed about the IDP process and invited to participate in the process. Through this collaborative process, priority issues are formulated and then ranked (Sadiki, 2000).

IDP has so far, gone through two rounds of implementation. The first trial run happened in 1998 and involved mainly the implementation of land development objectives. The second wave occurred in 2001/2002 and it attempted to incorporate the lessons learnt from the first round of implementation.

3.5.1 FIRST WAVE OF IMPLEMENTATION

Sadiki (2000) performed a study testing the attitudes of residents to the new change over of municipality in the Louis Trichardt Transitional Local Council (in the Limpopo province). The findings were not very positive. Rural residents felt that living in the heavily subsidized era of the Venda government was better and that the new municipal structure worsened their poverty, whilst white residents felt that integration was just a structure imposed on them. They saw themselves as being over-charged to make-up for the non-payment of rural dwellers. In the sampled areas, non-payment was rife. Residents felt the quality of service was poor. They asked for real service delivery first before paying for the services, whilst councilors wanted payment before providing more efficient services. It also appeared that the lack of consultation by councilors with the community was seen as the major cause of conflict in the transitional local council (TLC). The people in the rural areas also feared that replacement of "permission to occupy" with "Deed of Grant" will strip chiefs of their powers. They thus resisted attempts at having the rural areas join up with the TLC (Zoutpansberger, 21 August 1998). Despite several implementation problems, some success stories nevertheless do exist. The presidential water project and electrification of villages were implemented by the local council with above-average success. Retrospectively, delivery in African areas is too slow, worsened by a culture of non-payment, leading to an increase in rates and taxes (Sadiki, 2000).

Liebenberg (1998) investigated into the IDP process in the Worcester region. He notes that unlike many other municipalities, there was a significant buy-in from most sectors

of the community into the IDP process. Liebenberg believes that this could be due to the strong NGO presence in Worcester. However despite good participation, there was still non-participation by some sectors of the community. In particular, women's groups were under-represented. The study revealed that political parties still share a strong adversarial relationship. This antagonism spilled over into the IDP process and negatively affected whatever progress was made.

Lamont (2000) performed a study where she investigated the perceptions of officials responsible for the implementation of the IDP in the North West province. Her results show that many feel little guidance is being given by national and provincial government. Furthermore, the officials remark that there is a multiplicity of laws governing IDPs and this is confusing them. They were also of the view that a certain degree of centralization was necessary because local structures were weak and unable to implement high level strategies and policies. Another problem raised is the unrealistic timeframes set by legislation. Her findings contain certain important implications. For one, some of her results (from the feedback of officials) challenge some of the core principles of the IDP. For example allowing centralization challenges the notion of community participation and puts in question the goal of democratic governance. At the same time it strengthens the belief that training and internal capacity – building needs to go hand-in-hand with the planning and implementation of IDPs.

3.5.2 SECOND WAVE OF IMPLEMENTATION

The government appointed a development task team to investigate the success of the second wave of implementation and to also gauge the extent to which the process is being informed by core IDP principles (Young *et al*, 2002). Two municipalities in six districts were sampled. The findings of this investigation produced mixed results. Like the first wave, consultants were still doing most of the planning. In some wards there was some evidence of community participation, but fairly weak links existed with the community in most other wards. IDPs were meant to act as an efficient allocative mechanism where scarce resources are allocated to projects most in need by the community. However, very little examination went into identifying the priority issues of the community. The investigation also revealed that very little was being done to promote spatial development planning. In some instances, progress had been so slow that previous spatial arrangements were being perpetuated. The findings further show that municipalities are still far behind in the preliminary planning process. Of those municipalities sampled, only half had proposals that qualified for funding.

3.6 STRUCTURAL CONSTRAINTS OF DLG

DLG has encountered a number of problems during its implementation. Three main problems have been identified. They are: (i) Local Government Structure; (ii) Community Participation and lastly (iii) finances

3.6.1 LOCAL GOVERNMENT STRUCTURE

The new local government structure has had to face two major challenges, namely to attend to institutional transformation and addressing institutional capacity constraints.

From an organizational theory perspective, *hierarchical* institutions are by nature static entities (Giddens, 1984)¹⁹. Additionally, over time, they become structurally entrenched, making institutional transformation generally a very difficult and painful process (Naidoo, 2000). This problem can be compounded when managers are still from the previous system of governance, where negative attitudes towards institutional transformation may exist (Giddens, 1984). Sadiki (2000) argues that the slow pace of institutional transformation might be one of the reasons why the DLG outputs are not being achieved within their respective timeframes. Rammble (2000) points out that the output backlog is particularly marked for the infrastructure and services sector in the township and rural areas.

Lack of institutional capacity is the other major challenge that new municipalities have had to face. Liebenberg (1998) especially, tends to lay emphasis on this point, and questions whether local government has the capacity to attend to the strategic issues such as poverty alleviation, improving efficiency and building customer-related partnerships.

3.6.2 COMMUNITY PARTICIPATION

The various laws (DFA, 1995, LGTA, 1998 etc) describe the principle of *community participation* at the local municipal level as one of the main goals of DLG. The importance placed on community participation is fundamental to strengthening democratic institutions. Liebenberg (1998) believes that policies are not prescriptive enough on this matter and leave too much leeway for local government to decide what the nature of participation should be. His concern seems to suggest that the space for independent decision - making can be open to abuse. It has also been the experience of many practitioners that the numerous policies and laws have provided very little detail or guidelines to help those within local government to design and compile their own IDPs.

¹⁹ The government institutions inherited from the past resembled such hierarchical institutions.

The absence of clear directives and policy skills at local level has left consultants drawing up what essentially should be a community – based document (Liebenberg, 1998; Sadiki, 2000).

3.6.3 FINANCES

DLG has to carry out a fine balancing act between weighing up community needs and being aware of the financial constraints with which it is faced. Some DLG strategies, for example, have major resource implications. These strategies include changing the nature of the urban space for residential integration and sustaining services in under-served areas (Sadiki, 2000). In areas where services have been provided, local government is faced with non-payment by local residents, further compounding the financial problems of local government. Rammble (2000) for example finds that as many as two thirds of municipalities could be in financial difficulties.

3.7 CONCLUSION

The promulgation of the DFA (1995), LGTA 2nd Amendment (1996), White Paper on Local Government (1998) and other laws pertaining to local government indicates quite clearly that the state considers the nature of governance to be an important dimension of development. IDPs, a strategic tool of DLG, include public participation as an important component of democratising governance. The discussion above has indicated that public participation have largely been absent from the formulation of IDPs and other core municipal activities. One can therefore question the extent to which accountability exists and whether this will have any impact on providing basic needs and other socio – economic services (e.g job creation) to poor communities. Another issue raised by the above discussion is whether local government is up to the challenge of carrying out its new socio-economic role? Thus far, with many teething problems such as lack of finance, non-payment of services, poor quality of service provision, capacity constraints and many others, it is quite clear that municipalities still have a long way to go before they can achieve the development goals espoused in the RDP.

CHAPTER IV

THEORETICAL DISCUSSION

4.1 INTRODUCTION

This chapter introduces the various approaches to assessing well-being and development. Theories of well-being have a direct bearing on how starvation, exploitation and inequity are measured and how they can be addressed. One of the things which we are interested in is finding out which of the various well-being approaches best stand up to a rigorous appraisal of a sophisticated and verifiable notion of poverty? Other supplementary questions of importance are, is well-being a unidimensional or a multidimensional phenomenon; what are the ultimate objectives of the various well-being theories; are there key identifiable ends of well-being that can be considered universal and which everybody is entitled to; what space of analysis (e.g. utility, goods or capability) provides the best description of poverty and what is of intrinsic importance to poverty and what is derivatively important? The answers to these questions will now be teased out by interrogating the following well-being approaches: The Utilitarian Approach, Basic Needs Approach, The Capabilities Approach and The Theory of the Good.

4.2 UTILITARIAN APPROACH

Utilitarianism is a tradition that stems from the work of two late 18th century and 19th century English philosophers and economists, Jeremy Bentham and John Stuart Mill. They asserted that an action is right if it produces happiness and wrong if it produces the opposite of happiness. Bentham and Mill were thus hedonists – that is they analyzed happiness as the balance of pleasure over pain and believed that these alone are of intrinsic value or disvalue (Ross, 1999).

4.2.1 SOCIAL WELFARE

Cohen (1993) proposes two ways of understanding welfare: It can be taken to mean enjoyment, or more broadly, an agreeable or desirable state of consciousness (hedonistic welfare) or it may also be understood as preference satisfaction where a person's preference is satisfied if a relevant state of the world is achieved. Van Praag (1993) puts it another way by explaining that utilitarianism understands individual welfare or wellbeing as an evaluation by the individual of his/ her situation. According to this explanation, it appears as if welfare has a strong subjective component where the

individual is placed in the best position to determine what state of being he/she is in. If activity A increases the welfare of person x, there is no guarantee that person y will also benefit from the same activity. Utilitarianism therefore is not an evaluation of the internal features that characterize an activity or what the activity confers on the individual, but rather the subjective experience of the individual when encountering the activity. This mental reaction from the aforementioned activity is captured as a level of utility - which incidentally is also the measurement indicator of utilitarianism.

More formally, Edgeworth (in Van Praag, 1993) assumed welfare positions described by consumption levels $x_1 \dots, x_n$ of commodities $X_1 \dots X_n$ denoted by vector X . An individual is then able to evaluate each situation X by a number represented by $U(x)$ - representing the level of satisfaction that individual derives from the different situations. Consumer behavior is then a search for a welfare position with the highest utility, given that the constraints on total expenditures $p_1x_1 \dots p_nx_n$ must not exceed given income y (Van Praag, 1993).

According to this approach, social welfare functions are then utilized to represent a measure of total welfare of society, given a number of variables as inputs. In this form, social welfare is a function of the levels of utility of members of society. Utilitarianism aims to find a welfare position where the utility of the population is maximised (Cohen, 1993). Alternatively, social welfare functions can be expressed as a function of other variables relevant to welfare, such as income or life expectancy (Wikipedia, 2001). Using this approach, Atkinson (1970) set about using these social welfare functions to explain and interpret measures of inequality and poverty.

4.2.2 POVERTY AND SOCIAL WELFARE

Poverty is the defining characteristic of underdevelopment and its elimination is the main aim of economic development. Social welfare thus becomes an indicator for those who are poor, using living standards as the objective measure (Ravallion, 1992).

If x is a suitable measure of living standards (usually per capita real Y /consumption), the value of social welfare is denoted by W , which is a nondecreasing function of all x in the population so that

$$W = V(x_1, x_2, \dots, x_n)$$

x relates to individuals and N the number of population

The above is thus seen as a social aggregator that turns the distribution into a single number. When V is increasing, social welfare is greater whenever one individual is better-off and no one is worse off. Pareto improvement is thus improvement in social welfare. Social welfare functions prefer more equal than less equal distributions. Policies for equality will have incentive effects with social welfare functions maximized when all x 's are equal. Thus the preference for equality is not the same as the claim that equality is desirable. Equity preference is guaranteed if function V is quasi-concave or if there is diminishing marginal utility to each x (Deaton, 1997). Quasi-concavity implies social welfare will be increased by any transfer of x from relative positions. This is commonly known as Dalton's *principle of transfer* (Zank, 2001).

Income poverty measures are then derived from these utilitarian welfare functions with individual utilities as the critical welfare metric. With additional stringent assumptions (like complete markets, no externalities/ public goods, no increasing returns to scale) it can be shown that individual incomes are a measure of individual welfare as all welfare relevant goods can be purchased in a competitive market (Ravallion, 1996; Deaton, 1997). In South Africa a consensus is developing for preferring consumption rather than income with most researchers thinking it a better measure of lifetime welfare than current income with it also being more reliably reported, especially amongst the poor (Carter & May, 1999; Klasen, 2000; Woolard & Leibbrandt, 2001).

There are other countries, especially developed countries where information on incomes is reliably obtained, and income is preferred as a measurement of welfare. Ravallion (1996) argues that this approach limits the concept of 'welfare' and non-income indicators should be incorporated into the understanding of the 'welfare' concept for 'welfare' to be more correctly represented. He argues that one could in theory come up with a very broad income concept which provides an exact metric of almost any concept of 'welfare'. If this should be decided upon, then one should include the value at appropriate prices of all commodities consumed (including own production) and normalized for cost – of - living differences in demographic composition.

4.2.3 CRITIQUE OF UTILITARIAN APPROACH

Klasen (2000) raises four objections to the Utilitarian approach, namely;

- (i.) Appropriateness and interpretation of utility as the measure of welfare
- (ii.) Interpersonal variation among individuals in translating incomes into utilities
- (iii.) Difficulty of interpersonal comparisons of utility
- (iv.) Restrictive assumptions are highly unrealistic

We consider each objection seriatim

(i) Appropriateness and Interpretation of Utility as the Measure of Welfare

Sen (1980, 1984, 1999) has been one of the most outspoken critics of the welfarist tradition. Specifically, he's been strongly critical of the welfarist's use of the utility metric as a measure of well-being. He states in a typical passage on the subject:

"Mental metric of happiness/ desire-fulfillment can be deeply biased since mental reactions reflect defeatist compromises with harsh reality induced by hopelessness. Sharecroppers, landless labourer and subordinate housewife can come to terms with their predicaments, with their grievance and discontent submerged in cheerful endurance by necessity of uneventful survival. Disutility and discontent, instead of being tragic outcomes (as in utilitarian assessment), would have constituted a positive assertion of creative potential (Sen, 1984: p 512)"

Sen (1984) also alludes to the thesis of false consciousness, which Clark (2002) mentions has some empirical support in the literature. In the above passage Sen (1984) also appears to imply that a state of happiness can occur irrespective of one's standard of living and thus as Clark (2002: p33) states "achieving happiness and realizing desires is not necessarily an indication of high levels of personal well-being". Sen (1999) thus argues that utility is inappropriate for guiding policy since a person can adjust expectations to her condition. He (1980) uses one of his favorite examples to drive home his point by mentioning that if someone is happy and has ample opportunity for happiness, egalitarians would not strike such a person off a list of free wheelchair receivers. Such a person, Sen claims, would require a wheelchair irrespective of whether or not it is needed to be happy. For Sen, utility is just too restrictive a concept. For example, Utilitarians are not interested in whether cycling will fulfill your transportation requirements, but on the utility the individual derives from the activity.

(ii) Interpersonal Variation among Individuals in Translating Incomes into Utilities

People have different capacities in translating incomes into utilities. These capacities are subject to a host of reasons. Among these are the preferences that individuals have. For example if person A enjoys burgers and person B does not, it follows that person A will derive more utility from consuming burgers. Furthermore the current state of being of the individual will also influence participants' translation rates. However, without dwelling too much on the underlying reasons for why individuals have different conversion rates,

of more interest is what are the implications for utilitarian theory? Rawls demonstrated quite forcefully the ramifications of this approach, which Cohen (1993) later describes as the 'expensive tastes' criticism. Rawls (1971) depicted a situation where there were two people. One is satisfied with a diet of milk, bread and beans, the other distraught without expensive wines and exotic dishes. In this situation, one must provide the one with expensive tastes with more income otherwise the former will be satisfied and the latter distraught. In this case the one party bears the cost of the other party's lack of self-discipline.

(iii) Difficulty with Interpersonal Comparisons of Utility

Since utility is the subjective assessment of individual well-being the question arises whether two individuals impute the same value to similar levels of utility? Van Praag (1993) believes one can't really say. It appears as if in the utilitarian tradition each individual has his/her own measuring rod with the implied outcome being that in the absence of standard information being passed onto the participants, each individual calibrates their measuring rods differently. The utility function approach cannot therefore be applied to intra or inter-personal welfare comparisons without accepting unproven assumptions. Thus all welfare comparisons are forbidden except for the assumption that if someone does not have less of anything than individual B, then that person cannot be worse off than B. It follows that social allocation of goods over individuals can be improved if nobody gets less and at least someone gets more in the new allocation (Van Praag, 1993).

Another point that is not completely clear is whether equal difference in the value of utility function implies equal pain difference for the interval? For example whether the fall from v.good to good is equivalent to fall from good to amply sufficient. Van Praag (1993) states that one can neither say they imply equal utility jumps nor that they do not. The reason is that a measuring rod to measure utility is itself lacking.

(iv) Restrictive Assumptions are Highly Unrealistic

To calculate material well-being, one has to measure what and how much individuals consume. Therefore certain assumptions, such as the consumption of public goods and the value of leisure time are ignored (Ravallion, 1992). The standard of living is thus only taken to depend on the current consumption of privately supplied goods (Leibbrandt *et al*, 2001). However, it is commonly known, that much of what people consume, especially amongst the poor, comes from social services delivered by the state. Also,

people derive utility from many non-market goods. These also have value, yet they are not included in the calculus of welfare.

4.3 BASIC NEEDS APPROACH

The Basic Needs approach signals a departure from the welfarist tradition on two fronts. First Stewart (1996) writes that the Welfarists conceptualize poverty in terms of the amount of income needed to escape poverty. Second Streeten *et al* (1981) states that the welfarist approach towards assessing well-being only considers privately consumed goods. The Basic Needs approach addresses both these limitations by (i) adopting a multifaceted approach, which includes defining key socio-economic indicators and secondly by (ii) incorporating non-material needs such as public participation and self-determination as part of what constitutes basic needs.

These key socio-economic indicators include items such as food, clothing, shelter, water and sanitation, which are quantified at minimum levels necessary to achieve a decent life. This relationship between ends (decent life) and means (goods and services) can be described by a Metaproduction function. According to Stewart (1996) the Metaproduction function is specified as:

$$L^* = f(B_i, B_{ii}, B_{iii} \dots) \quad (1)$$

L^* indicates the end (decent life) and is represented by three Quality of Life (QoL) characteristics. They are: health, nutrition and an indicator for educational attainment. The three QoL characteristics are operationalised through three proxies. *Life expectancy* is used as a measure of **health**, *literacy rates* for **education** and *child malnutrition* is used as an inverse measure of **nutrition** (Stewart, 1996). The variables B_i , B_{ii} and B_{iii} represent basic needs goods and services required to achieve the decent life (L^*). It has been mentioned before that these goods and services include both market-related (e.g. water) and non-market related goods (e.g. public participation). However the importance of both these aspects of basic needs can be noted in an example of a well-run prison, where a basket of basic needs is delivered efficiently to its target group but basic human needs are not met in the process (Streeten *et al*, 1981).

Stewart (1996) mentions a number of salient features characteristic of L^* . Firstly according to him the three characteristics of L^* are recognized as universal human needs. Their achievement is therefore considered important in any context, especially in developing countries where basic needs are lacking. Secondly, these three characteristics are easy to measure and lastly they are preconditions for attaining other aspects of a full

life. However a potential drawback with the QoL indicators is in the decision of deciding on the weights needed to arrive at a composite index.

Income however is not completely left out of the basic needs framework. Drawing on Stewart (1996), one observes that at an *individual level* income acts as an instrumental variable, important only to the extent that it satisfies basic needs. At a *societal level*, the richer a society becomes the more income is needed to achieve a minimum decent life since the goods and services required to meet the basic level is likely to rise. At a *national level* the relationship between average income per capita and L^* varies depending on income distribution and expenditure patterns among individuals, government expenditure priorities and historical circumstances determining the nature of the metaproduction function.

4.3.1 BASIC NEEDS AND POVERTY

The basic premise of basic needs in its approach to eradicate poverty is its belief that the productivity of the poor needs to be increased (Streeten *et al*, 1981). From the literature we can observe two ways in which the basic needs approach attempts to achieve this: (i) *long term strategy* and (ii) *short-term strategy*.

(i) Long – Term Strategy

The basic needs approach states that a lack of human capital is the fundamental problem that prevents the poor from acquiring their basket of basic needs to live a decent life. The long – term strategy is based on a *demand* and a *supply* response. The demand response suggests that policies, especially in developing countries (where large numbers of the population are unemployed) should focus attention on restructuring patterns of production and income in a way that benefit the poor (May, 1998). On the supply side as mentioned by Streeten *et al* (1981), it advocates the provision of health services and education as a means to increase the human capital of the poor and hence their productivity. For this *supply strategy* to work, an obvious implication is that it assumes a market clearing model where those who are looking for work will find employment. However in developing countries there are obvious supply constraints that make it difficult for the formal sector to absorb the large numbers of unemployed. Given this stark reality the basic needs approach suggests an interim short-term strategy.

(ii) Short – Term Strategy

Due to the nature of basic needs goods, a large amount of these are delivered by the public sector (RDP, 1994). The government therefore plays a large role in eradicating

poverty. However as Ngwane *et al* (2001) mentions many developing countries suffer from a lack of resources that prevent them from delivering the minimum level of social services to the poor. It is therefore obvious that it will take some time before all the poor will have access to the health services and education required to increase productivity. Streeten *et al* (1981) mentions though, that faced with this practical reality the basic needs approach suggests that in the short-term government should implement subsidy programmes as a substitute to increase the productivity of the poor and as a means to afford the minimum bundle of basic human needs necessary for a productive life.

4.3.2 THE SOUTH AFRICAN SITUATION

The RDP (1994) makes it clear that it supports a basic needs approach in its fight to eradicate poverty. The developmental local government structures put in place has also attempted to operationalise this model. Government has implemented a number of programmes to bring service delivery to the poor. However as Ngwane *et al* (2001) states the problem with developing countries, including South Africa, is that there are insufficient resources available to bring basic service delivery to all those who are poor. A further problem for South Africa with the basic needs model derives directly from its assumption, which holds that leakages in a selective system are less than that within a general system. National roll-outs of basic services are thus prone to large leakages and many (Liebenberg, 1998, Sadiki, Lamont, 2000, Rammble, 2000 *inter alia*) who have undertaken IDP assessment studies have confirmed this outcome. A further problem with the basic needs approach is that due to the emphasis on providing a quantitatively satisfactory level of basic needs to the poor, hardly anything has been said about the quality of these services. Several IDP studies (Sadiki, 2000, Lamont, 2000, Rammble, 2000) therefore reveal that whilst the basic needs of the poor might have been satisfied, the quality of the services have invariably been questionable with many services becoming dysfunctional after a period.

4.3.3 CRITIQUE OF BASIC NEEDS APPROACH

The critique of the basic needs approach can be categorized into 3 main themes. They are: (i) The objective or ends of basic needs (ii) The role of goods and (iii) The income variable.

(i) The Objective

Stewart (1996) mentions that the basic needs approach is based on a simple moral imperative - everyone should have access to a minimum decent condition of life and this objective is given priority above all other objectives. The minimum decent life (MDL)

that Stewart (1996) speaks about is not the same as L^* in the metaproduction function. L^* refers to Quality of Life attainable and is thus much broader than MDL. Here we deliver a critique of both L^* and minimum decent life.

Proponents of basic needs model (Streeten *et al*, 1981, Stewart, 1996) define L^* in terms of 3 characteristics which have already been mentioned above. However, no formal verification has been mentioned of whether these are the only characteristics that should be included as proxies for QoL. Therefore in the absence of such information one cannot be sure to what extent L^* in fact captures the entirety of QoL. The concept of a decent life/ minimum decent life, which represents a subset of L^* , is according to Cohen (1993) not very well-defined and in fact could be culturally and historically specific. Cohen (1993) states that even if it were agreed what a minimum decent life entails, differently constructed and situated people would require different quantities of primary goods to satisfy needs. The relativity in terms of goods and services therefore suffers from a similar variability to the concept of utility. Sen (1999) on the other hand isolates a strategic weakness in the minimum decent life concept. He (1999) points out that a complete focus on minimum requirements might lead to a softening of attitude towards issues pertaining to inequality. Critics might therefore argue '*minimum needs and no more*'.

(ii) The Role of Goods

According to Streeten *et al* (1981) the basic needs approach encompasses both material and non-material needs. However, in the empirical studies, the multi-faceted basic needs approach only specifies socio-economic indicators. One therefore wonders how non-material needs, such as self-determination, public participation and security which Streeten *et al* (1981) makes mention of, fits into the practical side of implementing and measuring basic needs. In the empirical studies (May *et al*, 1995, Stats SA, 2000, Ngwane *et al*, 2001 inter alia) very little mention is made of this other (non-material) dimension of basic needs. Even if non-material needs are accounted for (the empirical studies do not confirm this) one wonders how these variables would be operationalised in practice. It is perhaps due to its practical deviation from the original theoretical construction that Sen (1980, 1999) and others (Cohen, 1999, Klasen, 2000) accuse the basic needs approach of '*commodity fetishism*'. Sen (1980) argues that the basic needs approach focuses more on goods and services than on human beings. Sen (1980) states that goods only derive their importance from what they are able to do for human beings. However Stewart (1996) defends the basic needs approach from such an attack by stating that the metaproduction function in fact takes QoL as its objective and goods and services are merely the means to improving the QoL of people. Despite Stewart's

sentiments, it is difficult to find a situation where goods and services are not given an emphasis above the QoL objective of basic needs.

(iii) Income

Although not specified in the metaproduction function, income nevertheless is implicit in it. One of the problems Stewart (1996) mentions with the income variable (as it is used in the basic needs approach) is that it does not capture people's ability to meet basic needs because societal average is not sensitive to income distribution. Therefore a typical situation might arise where the societal average is quite high but many people are still unable to meet basic needs (Stewart, 1996).

4.4 CAPABILITIES APPROACH

4.4.1 UNDERSTANDING 'CAPABILITY'

Sen's capabilities approach has been evolving for over two decades. Over time some concepts have taken on a wider meaning and others have been incorporated into the capabilities approach. However, sometimes these adjustments have been made without warning and attempting to grasp the construction of his approach can sometimes lead one to misleading conclusions. It is possibly due to these adjustments that researchers (Stewart, 1996, Chiaperro - Martinetti, 2000, Klasen, 2000, Clark^b, 2002) in the field don't all interpret Sen's writings in the same way. Nuanced differences are observed in their understanding of how the main concepts are interrelated. This might not be an altogether intractable problem and might merely be demonstrating the plurality of his approach. These different interpretations further demonstrate the complexity of the issues relating to well – being and development, which is precisely this characteristic that Sen (1980, 1983, 1984, 1999) has attempted to convey to his audience over the years.

The novelty of Sen's Capabilities approach lies in the radical new way in which he has conceptualized the meaning of well-being and development by moving the focus from the means to the ends - thus placing an emphasis on people as the ultimate beneficiaries of development (Chiaperro – Martinetti, 2000, Clark^b, 2000). Sen (1980, 1983) asked the question 'what does income allow people to do' (utilitarian approach) and 'what does goods do for people' (basic needs approach)? Sen reflected that it was not income or goods that were important in themselves but rather what one could do with income and what goods confer on the individual.

Sen (1983) argued that human life is made up of *beings* and *doings*, together defined as functionings. 'Beings' refer to a desirable state of the individual – for example being educated, being well-nourished or being free from malaria. 'Doings' on the other hand refer to the active part of human life – for example riding a bicycle, playing tennis or being actively involved in the community.

In Sen's framework the interplay between functionings (beings and doings) and *capability to function* lies at the centre of understanding his capabilities approach. To begin with, the capabilities set constitute a combination of functionings or basic things that a person can achieve (Stewart, 1996). The capability set however is unobservable and in reality only the chosen functionings can be observed. The functionings chosen, according to Chiaperro - Martinetti (2000) reflect the choice of the life the person wishes to live. She (2000:p4) states: "... if achieved, functionings constitutes the person's well-being, capabilities represent the real opportunities for the person to have well-being and include also the freedom to have alternatives other than the chosen combination".

Despite functionings occupying the evaluative space, capability to function has remained the focus of Sen's approach when it comes to analyzing well-being and development. In his writings (1980, 1983, 1985, 1999) examples are often quoted to demonstrate the difference between his capabilities space and the utility and commodities spaces. Sen (1983) mentions in one of his early works that by nature a bicycle represents a commodity. It has several characteristics, one of which is the capability to move in a particular way. The person acquires utility/ happiness if she seeks this movement and finds it pleasurable. However, in this example the capability to function, according to Sen (1983) comes closest to the notion of standard of living. In the literature, examples are further used to make clearer the relationship between functionings and capabilities. Cohen (1993) makes use of this method to demonstrate the conceptual difference. He states that being fed gives one the capability (i.e. nourishment) to exercise functionings (e.g. work, be active, learn and study *inter alia*). An interesting feature of the above example is that a single capability (nourishment) can give rise to a number of functionings. In Sen's (1983, 1985, 1999) works this quality appears as a defining characteristic of basic capabilities, such as having the ability to be well-nourished, be educated or have ability to live a long and creative life. Capabilities can also combine in a way that will expand other capabilities. For example, someone who is illiterate requires motivation, drive and nourishment *inter alia* to undergo the process of literacy. For Clark^a (2002), this flexibility represents one of the strengths of Sen's capability approach.

The capabilities and functionings achieved are also dependent on a number of key variables. Chiaperro - Martinetti (2000) mentions that amongst these are personal traits (e.g. people's age, gender, health and their disability condition), environmental conditions (e.g. socio-economic, institutional and household) and the conversion process which relates to converting resources into well-being. The last variable strikes one as a close resemblance to the basic needs metaproduction function. However it must be said that this conversion process is nowhere explicit in the capabilities approach as it is in the basic needs approach.

4.4.2 CAPABILITIES AND POVERTY

John Rawls (1971), in his analysis of social justice, provided the first big break with the traditional utilitarian notion of understanding poverty. Later Sen (1980, 1983, 1985, 1999) was to overtake Rawls by making two changes from previous approaches: Sen's approach moved (i.) from actual state to opportunity and (ii.) from goods and welfare to functionings. Of this Cohen (1999:p 10) writes "If Rawls and Welfarists fixed on what a person gets within the welfare space and goods, Sen fixed on what he gets in the space between welfare and goods... by emphasizing what a person gets as opposed to what she does".

Two themes on poverty can be identified within Sen's works. Fixing on the space between welfare and goods, Sen has taken it upon himself to discuss the conceptual and methodological differences between the capabilities approach and those of (i) an *income-based approach* and (ii) a *basic needs approach* to poverty. This juxtaposition of Sen's ideas allows the capabilities approach to become more manifest and coherent. In Sen's case he has opposites on either side which provide him with a perfect platform for the elucidation and construction of his ideas. It's possibly due to these (and other) reasons that Chiaperro - Martinetti (2000) believes that the capabilities approach brings to light a clearer picture of poverty, deprivation and inequality. We will therefore now address the capabilities approach within the two themes mentioned above.

(i) Income – Based Approach and Capabilities

Utilitarianism insists that everything, including other capabilities should be judged exclusively in the metric of utility (Sen, 1984). The removal of starvation, exploitation, inequity and other deprivations are therefore not important per se, but only rendered important if there is a net utility gain through its removal. In his work, Sen (1984, 1985, 1999) is heavily critical of this view of poverty. Sen (1985) subsequently argues that the capabilities approach is different from this income-based approach, precisely because

poverty is not ultimately about income but about a failure to meet a minimum level of capabilities.

In the capabilities space, Sen (1985) argues that perspective is absolute whilst relative income is merely derivatively and contingently important. The concept of absoluteness has been misunderstood by many well-known development experts including the illustrious Peter Townsend (1985). Sen (1985) explains that the characteristic feature of absoluteness is neither constancy over time, nor invariance between societies or a concentration on merely food and nutrition.

Despite the contingent and derivative relationship between the two, Sen (1999) summarizes why the capabilities space provides a better description of poverty than the income – based approach. Sen mentions that: (i) concentration on deprivation is intrinsically important while low incomes are merely of instrumental importance; (ii) incomes are not the only instrument in generating capabilities; in other words the capabilities space is much broader than what pertains to the income-based approach; and lastly (iii) The instrumental relationship between low incomes and low capabilities is variable between communities, families and different individuals, in other words the conversion of income into capabilities occurs at different rates in different settings.

To further appreciate the multiplicity of Sen's approach, two states are described, which provides further justification for the appropriateness of viewing poverty within the broader capabilities space. They are: (a.) *Unemployment* and (b.) *Handicaps and Intra-family distribution*

(a) Unemployment

According to the Welfarists the central implication of unemployment is loss of income. However in terms of the capabilities approach, unemployment has much more severe implications than merely loss of income that can be made up by some transfer by the state. The capabilities approach argues that at the origin lies the debilitating effect that unemployment has on a person's freedom, initiative and skills. Sen (1999) argues that social exclusion among some groups is one of the chief factors that give rise to these debilitating effects. The net effect of this social exclusion is therefore a loss of individual reliance, self-confidence and psychological and physical health.

(b) Handicaps and Intra _ Family Distribution

Handicaps such as old-age and disability demonstrate that real poverty within capability space is more debilitating than real poverty within income space. This is because those with disabilities have less of an ability to earn income and also at the same time find it harder to convert income into capabilities (Sen, 1999). Another marked distinction between the two approaches is that poverty is relative within the income space, whilst it is absolute within the space of capabilities. Sen (1999) argues that a poor person in a rich country requires more income to buy commodities, which will achieve the same social functioning as a person who stays in a poor country where this particular feature is more or less universal.

Furthermore intra-family allocation of resources increases complications with the income-based approach to poverty. Preference for certain family members (e.g. boy) above others (e.g. girl) suggests that the extent of deprivation of neglected family members is not adequately reflected in terms of income distribution within the family²⁰.

(ii) Capabilities and Basic Needs

The relationship between capabilities and basic needs can be examined within three dimensions. They are: (a.) Conceptual (b) Practical and (c) Interpretive dimensions.

(a) Conceptual

Drawing on Stewart (1996) the basic needs ultimate objective is decent life characteristics L^* , whereas for the capabilities approach the ultimate objective is not functionings but capabilities²¹. According to Sen (1980, 1983, 1999) this difference in emphasis is important for two reasons. Firstly, individual *choice* is given central importance. Within the basic needs approach however choice is absent from the characteristics of a decent life. Secondly, for different people the capability of being well-nourished can be met even if they are malnourished (e.g. when fasting for political reasons). However within the basic needs approach, malnourishment is considered a functioning failure irrespective of the reason.

Another marked difference between the two approaches is that commodity requirements for specific capabilities may not be independently decided on for each person due to

²⁰ Deprivation of girls can be more readily checked by looking at greater mortality, morbidity, under-nourishment, medical neglect, than on the basis of income

²¹ The subtlety here lies in the space of analysis. In terms of the capability approach one would therefore not be interested in being well-nourished, but rather in the capability of being well-nourished.

social interaction. For example as Sen (1999) mentions, appearing in public (without decent clothes) to avoid shame depends on the consumption of other people. Absolute deprivation of capabilities thus varies in terms of commodities and income. Needs according to Sen, is also passive conceptually. He (1984) thus argues that despite the foundational differences, the important distinction between the two approaches is based on strategic grounds. It is therefore Sen's (1984) belief that the concentration on basic needs interferes with the construction of a solid material base for economic prosperity.

(b) Practical

Despite the theoretical differences, the capabilities set and characteristics of a good life are difficult to observe. Therefore in the empirical work, using the traditional methodologies, the two approaches come closest together. Both confine their empirical focus to that of income, public and private provision of basic goods and services and functioning characteristics of a decent life (Stewart, 1996). It is therefore not at all surprising that both approaches enumerate socio-economic indicators such as nutrition, health care, shelter, water, sanitation and education *inter alia* in their respective empirical works (Sen, 1984).

(c) Interpretive

Due to the respective spaces of analysis, the two approaches interpret functioning failure in different ways. According to the basic needs approach, if there is a functioning failure, alarm bells would ring and there would be an immediate search for the cause and cure. However in terms of the capabilities approach, a functioning failure is considered as a choice and left at that (Stewart, 1996). David Blaine's exploits of remaining without food for 44 days, suspended in a glass box above the river Thames confirms that even a state of malnourishment, hunger and possibly ill-health can be a matter of choice.

4.4.3 CRITIQUE OF CAPABILITIES APPROACH

The various objections to the capabilities approach will now be discussed.

(i) Midfare

Cohen (1993) states that it is incorrect to say that all goods do is confer capability on people. He describes a space known as *Midfare*. Midfare is what goods give people (between goods and utility). He argues that goods endow people with capability which they may/may not use. Through the exercise of capability, goods contribute to the performance of valuable activities and the achievement of desirable states sometimes

without the exercise of capability on the part of beneficiary (e.g. destroying insects that one could contract malaria from) (Cohen, 1993).

(ii) Examples used Problematic

Sen's examples can be questioned. He uses the example of a bicycle to illustrate that cycling enhances well-being (also yielding utility). Cycling over long distances however, can cause exhaustion, even threaten health. This detracts from people's well-being. With Sen's other example (i.e. bread), there is more than nutritional value when people consume bread or other goods. In Clark's^a (2002) survey people indicate drinking coca cola, an unhealthy product (although it does have some nutritional value) presumably because they enjoy it.

(iii) Utility

A diverse combination of physical, social and psychological achievements contribute to a good life style. Clark^a (2002) is of the opinion that more emphasis should be given to the role of utility (valuable mental states) and hedonistic ends. The argument is that psychological achievements like happiness, confidence etc not only have intrinsic value but also immense instrumental significance. Chronic depression/ madness can seriously undermine capability to function well.

There is also a greater overlap between the categories of commodities, functionings and utility than the current literature on capabilities suggests (Clark^a, 2002). Experiencing happiness is an important aspect of well-being. The Utility concept can be extended to represent a wider spectrum of mental states (e.g. happiness, excitement, pleasure, relaxation etc). Utility can be of instrumental importance for human functioning. For example, deriving pleasure from riding a bicycle helps facilitate other achievements like moving around. Sen fails to see that some functionings came into being and depend upon mental states (Clark^a, 2002).

(iv) Choice and Freedom

The question raised by some is whether all capabilities entail the opportunity to choose? (E.g. To live long and avoid illness) Many capabilities depend on public action and policies. Sen's concept of capabilities should pay more attention to an individual's internal powers, skills and traits. Having these internal powers is necessary for exercising freedom and choice and achieving good human functioning. Clark^a (2002) states that there may be a case for inserting a category between Sen's concepts of 'functionings' and

‘capabilities’ that more adequately captures significance of personal powers and real opportunities. Clark^a (2002) potentially calls it ‘*actual abilities to function*’.

4.5 TOWARDS A THEORY OF THE GOOD

Clark (2002), in his attempt at putting forward an account of a Theory of the Good, challenges the conventional wisdom that has prevailed thus far. Clark (2002) takes issue with two concerns that as yet remain undecided in the literature. First the *conception* of a Good Life has never really achieved universal consensus. Attempting to promote an understanding of a Good Life is in itself fraught with conceptual and methodological pitfalls. Second the difficulties with identifying relevant ends are enumerable and have deterred many, including Sen himself from drawing up an objective list²². There is also the problem of conversion between the means and the ends. As Cohen (1993) points out, differently constructed and situated people require different amounts of goods and services to achieve the same needs (capabilities). Sen (1980, 1983, 1984, 1999) has also argued the case that a relative relationship exists between incomes and capabilities and how absoluteness of capabilities in no way implies (and cannot imply) invariability between regions and over time. The importance Sen (1980, 1999) attaches to freedom and choice for deciding amongst a combination of functionings and the sheer complexity of the wellbeing concept has further made him reluctant from drawing up an ‘objective’ normative account of human functioning.

However, Clark^b (2002) believes that through *scientific enquiry* and by drawing on the *values of poor people*, a worthy attempt can be made at putting forward a credible conception of a good life. Clark^a (2002) makes three theoretical adjustments to the existing literature. First he (2002) substitutes the concept of utility with the broader concepts of mental and psychological achievements. These concepts imply a wider range of emotions, including happiness, pleasure, joy and excitement *inter alia*. Second he (2002) includes both mental states and physical condition as representing important dimensions of well-being. The problem with other earlier approaches like the basic needs approach was that there was an exclusive focus on people’s physical condition at the expense of mental states²³. Third although basic subsistence goods are given clear priority in any account of human well-being, Clark^a (2002) suggests that the distinctions between dimensions given by Sen (1980, 1983, 1984, 1999) are *fuzzier* than Sen’s own analysis suggests. Here Clark^a (2002) draws on the experience of poor people and their

²² The Basic needs approach, has attempted to define relevant ends, which they call decent life characteristics. However the basic needs approach is almost exclusively relevant for poor countries only and only includes three decent life characteristics.

²³ The opposite of course is true with the Utilitarian Approach.

widespread use of cigarettes and beer. According to Clark^a (2002) there is little guidance from Sen on how he would deal with these activities within the capabilities framework, especially since these actions potentially produce negative functionings.

Clark makes a fourth amendment to the existing literature by conceiving of well-being as more than a tolerable life (as previous methods have implied) and suggests it is more agreeable to relate it to achieving the good life that people desire to live and have. To this end, Clark stresses the importance of recreation as an additional activity that distinguishes between those who live a tolerable and those who live a good life. Furthermore, Clark^a (2002) emphasizes in his book those substantive goods that lead to increased comfort, recreation and ease of living for people.

4.5.1 SOME COMMENTS CONCERNING CLARK'S APPROACH

There are some concerns with Clark^a's (2002) approach. By drawing on the values of poor people in his scientific investigation, the conception of the good arrived at, can only be applicable to that specific sample. If Clark^a universalizes the claim of his conception as he intends doing, further investigations need to be undertaken to assess whether the same list of objective functionings would be arrived at using the values and attitudes of people located in different places and occupying different socio-economic levels.

Furthermore, by using the values of people as the basis for the conception of a theory of the good, Clark^a (2002) is implying that people are the best judge of what this conception should be. This might be a perfectly sensible assumption to make, however numerous other critics have cast doubt on this supposition. Clark^a (2002) also unwittingly touches on this implication but does not realize the full extent of what he has uncovered. This is related to the findings of his fieldwork where the widespread practice of vices such as smoking, drinking and gambling exist amongst the poor. These activities can potentially lead to negative functionings and undermining of well-being. Clark^a (2002) interprets this observation as implying aspects of life that enhance good living. The important question that needs to be raised is does a conception of a good life necessarily imply a high level of well-being? This is an issue that Clark^a (2002) never really addresses in his book because his underlying assumption suggests that the two should correlate closely, if not precisely.

4.5.2 THIN AND THICK THEORIES OF THE GOOD

Clark^a (2002) distinguishes between '*thin*' and '*thick*' theories of the good. 'Thin' theories like Rawls' (1971) are confined to all purpose means to good living and leave

the final level unspecified (its advantage of preserving a rich context of choice, provides little insight into the context of development). ‘Thick’ theories of the good deal with identification of important ends across all spheres of human life. In other words, the totality of human functionings and capabilities that makes up a good life.

There are a number of criticisms leveled at those attempting to enumerate a theory of the good. They are:

- **Prejudicial Application:** can exclude the powerless and discriminate against the disadvantaged.
- **Importing Metaphysical Elements:** Run the risk of including metaphysical truths (it is argued that these do not exist/ if they exist, are not knowable)
- **Overlooking historical and cultural differences:** It is argued that different people and cultures understand human life and perceive development in a variety of different ways.
- **Neglecting Autonomy and Choice:** Any theory of the good is objectionably paternalistic since it discriminates in favour of / against certain lifestyles.

(Nussbaum, 1995, p70 – 72)

Clark^a (2002) affirms that Nussbaum’s Thick Vague Theory of Good (TVTG) has the potential to fit into Sen’s framework and with some adjustments has the potential to meet all four criticisms.

4.5.3 NUSSBAUM’S METHODOLOGY

Underlying Nussbaum’s (1992, 1995) methodology is the acknowledgement that different people construct items differently. It is for this reason that Nussbaum’s thick conception is deliberately vague. Nussbaum’s methodology parallels Sen’s approach in a number of strategic ways. The absoluteness of capabilities enters into Nussbaum’s framework through her capabilities list, which she specifies in very general terms. Her approach allows one to make multiple specifications of each of the dimensions. Like Sen, she also agrees that some capabilities and functionings are more central and at the core of human life²⁴. Finally Nussbaum’s (1995) methodology provides scope for plurality and local specifications. Freedom for Nussbaum is thus the choice of specifying each of the components in a locally congruous way²⁵. This she achieves by conceptualising

²⁴ *Basic capabilities* (i.t.o Sen’s framework) represented that subset of capabilities which was more central to human life. According to Sen (1983, 1999), being well-nourished, being educated and living a healthy life are some examples of basic capabilities.

²⁵ In Sen’s (1980) framework, freedom implies choosing from various combinations of functionings.

development at a high level of generality and leaves a great deal of latitude for multiple specifications.

4.5.4 NUSSBAUM'S THICK VAGUE THEORY OF THE GOOD

Nussbaum (1995, p72) asks the question, “what is the defining characteristic of activities (i.e. doings and beings) associated with a human / good form of life?”²⁶ Despite Sen's hesitation about providing any preliminary list, Nussbaum has no qualms about producing a list of her own. However what underpins Nussbaum's (1995) initial question is her belief that people from different cultures and societies share a common view of the general features of human life²⁷.

In her theory of the good, Nussbaum (1995) classifies the good life into two levels. *Level 1* constitutes a minimum conception of the good. Level 1 appears similar to Klasen's severe deprivation category. Level 2 sketches a vague and general outline of functional capabilities that make up dimensions of a good life. Here, development is understood in terms of capabilities.

Nussbaum (1995) also makes use of 2 thresholds. One who does not meet threshold 1 is someone who has not met any of the functionings of level 1 and thus not considered human. What Nussbaum is trying to imply by this categorization, is that level 1 is of such a minimal standard, that it is nearly impossible not to meet it. If, despite all attempts one is still incapable, then one can't really be human, because being human and to function as a human would require functionings above threshold 1.

Level 2 represents those capabilities required for a good life and anyone who does not reach threshold 2 falls short of achieving a good life. According to Clark^a, 2002, it should be government's aim to get people across threshold 2.

4.5.5 CRITIQUE OF NUSSBAUM'S TVTG

Clark^a, (2002) raises three issues with Nussbaum's TVTG. They are (i) Essentialism and functionings of level 1 not truly universal; (ii) Universality of conception of a good life and finally (iii) The necessity of incorporating the resource side of things.

²⁶ For Nussbaum, these features of human functioning (whatever they are) apply equally to both males and females.

²⁷ Nussbaum (1995) nevertheless acknowledges that items that make up the conception of the good are somewhat differently constructed by different societies. However, the considerable overlap and continuity of these items make possible the opportunity for consensus.

(i) Essentialism

Clark^a, (2002) argues that there is a difference between trying to characterize a human existence and attempting to define the concepts. One understands that in order to make her framework workable, some definitions of key concepts must be provided. However the implication is, given the existence of her 2 thresholds (i.e. threshold 1 & threshold 2), those who do not achieve any of the functionings fall short of achieving a good human life. In this sense, Nussbaum can be accused of essentialism. At the same time, since some people are unable to achieve level 1 functionings, it implies that all items on Nussbaum's list can't be strictly universal. According to Clark^a (2002), a complete and universal conception of the good is unattainable and any attempt at doing so would be paternalistic.

(ii) Universality

Underpinning Nussbaum's theory of the good is the belief that differently situated people share a common view of the general features of human life. However, Nussbaum does not show how she came to this conclusion. Clark^a (2002) mentions that for one to make such a claim a systematic study of human values needs to be made across cultures and societies. Thus implementing Nussbaum's TVTG runs the risk of imposing Aristotelian style virtues on local traditions.

(iii) Resources

Nussbaum's theory leaves out those inputs necessary to achieve intrinsically valuable functionings. Clark^a (2002) argues that the instrumental significance of these material goods is sufficient to have them included in any practical development ethic. Sen developed the framework of entitlements to take account of the importance of economic resources, gainful employment and physical security. This theory explains why poor people sometimes fail to achieve basic functionings (Clark^a, 2002).

4.5.6 CLARK'S AUGMENTED THEORY OF THE GOOD

Clark^a (2002) proposes an *Augmented Theory of the Good* (ATG). His theory is classified according to four categories: (a.) physical capabilities; (b.) mental well-being and intellectual development; (c.) relating and interacting and (d.) personal autonomy and freedom. A list of inputs for human flourishing is included. This represents nothing more than a theoretical concept of the good. This concept however needs to be empirically tested.

4.6 CONCLUSION

The capabilities approach is the best available framework for conceptualizing human development. It has the potential to accommodate the entire range of *capabilities to function* that contribute to a good life. Clark's ATG makes a meaningful contribution by proposing a list of functional capabilities and at the same time extends the capabilities methodology by making it suitable to confront a conception of the good. In his ATG, we see more room being made for utility and mental functionings and a list of essential inputs (e.g. water supply, sanitation etc) supplements the capabilities approach. Also 'capabilities' is extended beyond just *opportunity*, to include the ability to function according to rational deliberation. These are useful adjustments that make the capabilities approach more palatable to both utilitarians and supporters of the basic needs approach.

Nussbaum (1995), by specifying the functional capabilities that make up a good life in a vague and general manner, makes her methodology fit neatly into Sen's self-selection framework, where the virtues of choice and freedom play a central role in his notion of well-being²⁸. Despite economic resources playing only a contingent role in achieving capabilities and are thus omitted from Nussbaum's list of functional capabilities, their apparent importance in Clark's ATG gives credence to his view that the *theory of the good* needs to rest on the values of ordinary people²⁹. Perhaps following a scientific methodology to arrive at a conception of the good might further reveal other traditionally viewed inputs as having intrinsic value. Nussbaum's methodology of specifying functional capabilities in a conceptually vague and general manner may need to be extended if it becomes clear that no clear boundary exist between means and ends.

²⁸ In the next chapter we elaborate on a methodology of measuring poverty (i.e. fuzzy – set methodology) that meet Nussbaum's criteria of vagueness and generality in specifying the various functional capabilities.

²⁹ Clark's ATG is informed by fieldwork in three South African locations.

CHAPTER V

METHODOLOGY

5.1 INTRODUCTION

The choice of methodology contributes to the way poverty has been understood in South Africa in recent times. The choice of methodology is thus a crucial debate, influencing amongst other things the accuracy of mapping poverty, which affects the success of socio-economic policies aimed at making guided transfers to affected households and individuals. The Income/Expenditure approach has been favored by South African researchers for many years and recently the multi-dimensional basic needs approach has started gaining currency. Despite this impressive volume of research, a number of important methodological questions, still need to be satisfactorily addressed. These include *inter alia* the nature of poverty, the question of focal variable(s) for measuring poverty, the perceived arbitrariness of the poverty line and the choice of a poverty measure which accurately reflects the multi-dimensional nature of poverty. The ensuing critique will thus comprise four sub-themes: (i) Defining Poverty; (ii) Measuring Indicators of Poverty; (iii) Poverty Lines and finally (iv) Measures of Poverty. Fuzzy –set theoretic poverty measures are proposed as a potential answer to some of the methodological problems being encountered.

5.2 DEFINING POVERTY

Two issues arise: describing a concept of poverty and then determining who is poor. The literature uses two approaches to arrive at a concept of poverty. The first approach is a theoretical description informed by different theories on human development and well-being. The other approach is more subjective in nature and tries to understand poverty from the perspective of those who are already poor by asking them to define what being poor really is.

5.2.1 SUBJECTIVE CONCEPTION OF POVERTY

We address the second approach first. At face value the subjective approach appears non-paternalistic, thoughtful and very reasonable. Yet this is an approach not often used in the literature. May (1998) is one of the few South African researchers who have attempted to use this approach. Its *under-utilization* is probably a testimony to the resource constraints

under which many researchers are working. To determine what the poor think poverty means requires fieldwork, which further demands an outlay of capital, time and human endeavor. It is sound methodological practice to first establish the meaning of a concept before determining to whom the concept should be attributed. In other words, one needs first to define what rich means before saying whether person A is rich or not. However the subjective approach rejects this top-down approach and believes that those who are 'poor' or 'rich' are in the best position to define what these terms really mean. Of course there is always the possibility that the perception of the target group might be unduly influenced by extraneous factors³⁰.

5.2.2 OBJECTIVE CONCEPTION OF POVERTY

The second approach can be divided into two categories: a narrow conception, which understands poverty in terms of a lack of income and expenditure and a broad-based definition, which incorporates a number of key dimensions of deprivation. The narrow-based definition of poverty stems from the Utilitarian tradition. It understands poverty in terms of a lack of sufficient income³¹, where the poor are separated from the non-poor by a *threshold* representing a given level of income or resources (however defined). The threshold represents an acceptable level of living (determined by society) with those above it having the necessary financial resources to achieve well-being. Establishing the threshold level occurs in an arbitrary manner (Qizilbash, 2002), with some (e.g. RDP, 1994) viewing the threshold merely as a methodological device necessary to separate the poor from the non-poor. However, this definition of poverty does not sufficiently cater for the various characteristics and symptoms of poverty. For example individual A may have income that will place him just above the poverty threshold. Should he however decide to spend the money on non-essential items such as gambling or alcohol, leaving the family without enough money to buy food, one can hardly argue that such a household is not poor. The income-based definition of poverty therefore says nothing about the actual situation of those who are living in poverty. Furthermore this definition also does not capture the possible bias in intra-household allocation of income.

The broad-based definition of poverty captures poverty as a multidimensional entity - which includes a number of key dimensions, with insufficient income representing only

³⁰ For example Clark and Qizilbash (2003) discover that the participants, who were asked what the basic aspects of life were, mentioned most things that were listed in the RDP. They conclude that responses might have been influenced by political factors.

³¹ This definition is widely used in empirical studies by some South African researchers such as Woolard and Leibbrandt (2001), Borat *et al* (2001), whilst the World Bank (1990, 1997) and other leading researchers (Ravallion & Chen, 1997) have also adopted this definition during most of the 1990s.

one such dimension³². The broad – based definition of poverty can be defined in a number of ways. However, Klasen’s definition comes closest to satisfying the criteria of a broad-based definition which is sufficiently specific to act as a working concept³³. Klasen (2000) incorporates aspects of Sen and traditional approaches in his definition of poverty. He defines poverty in terms of observing the individual’s capabilities, which informs one what the person is able to do. The poor are separated from the non-poor by a threshold, which is defined as achieving a minimum level of capabilities to function. These capabilities include basic capabilities such as health, clothing, shelter and nutrition.

However, the second aspect, which is of deciding who are poor and non-poor by a threshold, seems too arbitrary. Qizilbash (2002) uses intervals to define those who are definitely non-poor and definitely poor. Those who fall between these categories have either a tendency towards being poor or a tendency towards being non-poor. This deliberate fuzzy-ness assists in eliminating the sense of randomness in the decision of choosing a threshold. Clark and Qizilbash (2003) have also confirmed that poverty as defined in terms of the perceptions of the poor bear out most of Sen’s capabilities.

5.3 MEASURING INDICATORS OF POVERTY

After defining poverty or a conception of poverty, it becomes necessary to find an indicator(s) that best reflects its understanding. No indicator is ever going to capture the construct perfectly but some indicators better reflect our understanding of poverty than others. Three ways of measuring poverty can be identified. They are:

- (i) Objective Social indicators like income/expenditure, life expectancy, average calorie intake etc.
- (ii) Defining a measure of well-being that reflects the constituents of well – being and include determinants such as shelter, health care, education and welfare
- (iii) Subjective approach through the attitudes and perceptions gathered from people

Empirical work deals mostly with (i) and (ii) and thus we restrict our discussion to these kinds of measures. Measures (i) and (ii) can be separately classified as Welfarist (i) and Non-Welfarist (ii). Both Welfarist and Non-Welfarist approaches could represent the notion of standard of living mentioned by Ravallion (1992). Standard of living is similar in its understanding to that of well-being, though the standard of living concept is used

³² Some who use the narrow-based definition of poverty (e.g. Woolard and Leibbrandt (2001)) inadvertently admit to its limitations by also incorporating into part of their analysis an assessment of the dimensions included in the broad definition.

³³ See Ngwane *et al* (2001), May (1998) and Stats SA (2000) for other variations of the broad-based definition of poverty.

more in relation to survey data. However, Welfarists prefer to use the standard of living concept in its poverty-related work while the non-welfarists tend to use well-being more frequently. Irrespective, we will now turn to examining the two approaches.

5.3.1 WELFARISTS

The welfarists choose either income or expenditure as an indicator to measure poverty. Stats SA (2000) reports that research shows that income and expenditure shares a strong linear relationship at national and provincial levels but this relationship becomes weaker at municipal level, among lower poverty levels and in rural areas. There are a number of reasons for this, the main one being that poor households do not provide an accurate account of their household income. Thus using the income indicator as a measure of poverty could be potentially misleading. Most welfarists are also of the view that expenditure patterns amongst the poor are more stable and better reflect long-time/ life time resources and thus welfare (Deaton, 1997, Ravallion, 1992).

Poverty is defined within the welfarist tradition as occurring when someone falls below a threshold, generally specified as some income level y_i . Income is thus an indicator of welfare and those who are poor are represented as not meeting a minimum welfare level. The literature appears divided about whether income is a satisfactory indicator of welfare. Woolard and Leibbrandt (2001) believe that there is a strong theoretical link between income/expenditure and welfare. They cite Glewwe (1988: 3) as support for their thesis. Klasen (2000) on the other hand finds a number of glaring problems with this approach. Surveys can only observe household expenditure and not individual expenditure. Attempting to jump from household expenditure to individual welfare is according to Klasen, large and hazardous.

In his later writings, even Ravallion (1996) (a welfarist) admits that the income metric limits the concept of welfare and concedes that non-income indicators should perhaps also be considered. However, he is also of the view that the income-concept can be broadened to include an exact metric of welfare, accounting for commodities being consumed at exact prices and including own production, with these prices being normalized for cost of living differences within the demographic composition. However Klasen (2000) makes clear that poverty cannot be just about being relatively poorer than others in terms of income. It also has to include opportunities for achieving material well-being and achieving a minimum level of capabilities. There are also conceptual shortcomings in the income/expenditure indicator. It does not take account of an individual's access to non-market goods and intra – household inequality which makes it difficult to rank welfare and hence the social states of individuals.

5.3.2 NON - WELFARISTS

The non-welfarist school focuses directly on indicators of well-being and human poverty. However the problem with focusing on well-being is that it understands poverty within a multidimensional framework, which makes measuring these indicators more difficult than the income – based approach. However there have recently been new methodological advances in measuring poverty within a multidimensional framework. The fuzzy – set poverty measures, which attempt to operationalise Sen’s notion of poverty, were originally started by the Italian School during the 1990s. The real breakthrough came when Cerioli and Zani published their seminal paper in 1990 entitled “A fuzzy approach to the measurement of poverty”. This method of measuring poverty will now be discussed below.

Klasen (2000) reports that the choice of (basic) capabilities (which constitute the key dimensions of poverty) is uncontroversial and agreed upon. However Clark and Qizilbash (2003) believe that the notion of poverty is vague and it makes little sense to suppose that there is a ready-made list of dimensions and minimum critical levels. This view is supported by comments made by Qizilbash (2002) in an earlier paper. He (2002) states that there are some people who believe that an analysis of poverty ought to allow for imprecision of the focal variable or whatever the space of analysis.

Fuzzy-set poverty measures attempt to provide this imprecision by assessing poverty within a framework of multidimensionality with the borderline between the poor and non-poor being imprecise. The results drawn from assessing poverty within this framework determines the dimensions chosen and the choices of the cut-off mark. Thus two kinds of vagueness can be identified in this framework as Clark and Qizilbash (2003) explain: *Horizontal* vagueness which relates to the vagueness of the dimensions of poverty and *vertical* vagueness which is vagueness pertaining to the minimum critical level at and below which people are classified as poor. Clark and Qizilbash (2003) mention that these concepts should not be confused with the incompleteness of welfare judgments represented by multiple poverty lines, which is a reference to the dominance and stochastic dominance suppositions of Atkinson (1987) and Foster and Shorrocks (1988).

Clark and Qizilbash (2003) take their understanding of vague concepts from the Super-valuationist account of Kit Fine (1975). Fine specified a set of admissible specifications of poverty. An account of poverty was considered to be admissible if it made sense to treat it as an acceptable notion of poverty. Therefore, Fine’s (1975) account of poverty

considered a statement to be super-true if and only if it is true on all the admissible ways of making the statement more precise. If the statement were super-true in any dimension, then such a person would be classified as *core* poor. In the core dimension of nourishment for example, if an individual is malnourished, she would be considered to be core poor and there would be no need to check any of the other dimensions³⁴. In this case, the individual's state of malnourishment would fall at or below the lowest admissible critical level of defining such a person as definitely poor within the nutrition dimension. Generally, then, those who would fall above the lowest admissible critical level in dimension i would be considered non-poor or not poor. These people would be seen as vulnerable which in Clark and Qizilbash's (2003) case refers to the possibility of being classified as being poor in dimension i due to the number of ways of specifying a cut-off for the lowest admissible level.

5.4 POVERTY LINES

There are a number of important reasons for establishing a poverty line. The RDP (1994) document considers establishing a poverty line to be the first step in mapping poverty. The poverty line can also be used as a baseline against which future progress in decreasing poverty can be measured. Thus in their view (i.e. RDP) it is less important what poverty line one chooses as long as there is a national consensus on the identified poverty line. Ravallion (1996) however believes that setting a poverty line matters because it will affect the determination of interpersonal welfare comparisons and the structure of the poverty profile – for example, accounting for spatial differences in prices.

Poverty lines have been variously defined in the literature. The central notion conveyed by all of them (May *et al*, 1997, Heintz and Jardine, 1998, Ravallion, 1998, Woolard and Leibbrandt, 2001) is that the poverty line represents some threshold z_i below which people are classified as poor (however defined). Two types of poverty lines can thus be identified in the literature: (i) Relative Poverty lines and (ii) Absolute Poverty Lines. The relative poverty line is rarely used in the literature, thus we ignore it in the following discussion and instead focus our attention on the *absolute poverty lines*³⁵.

³⁴ One would still require information on the other dimensions to make calculations pertaining to the headcount ratio, which calculates the proportion of the population that is core –poor (Clark and Qizilbash, 2003).

³⁵ Refer to Ch. 3 of the World Bank's Analysis of Poverty (2003) and Crothers (1997) for a review of relative poverty lines and their methodological weaknesses.

5.4.1 ABSOLUTE POVERTY LINES

The essential characteristic of an absolute poverty line is that it is fixed in terms of the standard of living it commands over the domain of poverty comparisons (World Bank, 2003). Two categories of absolute poverty lines exist: (i) Subjective and (ii) Objective poverty lines. These two categories represent the different ways in which absolute poverty lines are derived. Of the two categories, subjective or self-rated poverty lines are adopted in rare instances and we therefore omit them in the proceeding discussion³⁶.

Objective poverty lines are the more traditional form adopted in the literature. Due to their pervasive use, they are also commonly referred to as absolute poverty lines, thus indicating their dominance in representing the whole of this category. Two methods are used to derive an objective poverty line. The first method is tied to the income/expenditure measure and the second, derives from the basic needs/ capabilities concept. We now examine these two methods separately.

(i) Income – Expenditure Approach

Theoretically, the income-expenditure approach has an extensive history and is used most often in terms of standard of living studies. Ngwane *et al* (2001) subscribe to this understanding and it is supported by Ravallion (1996). Ngwane *et al* (2001) explain that the poverty line indicates a point that represents the value of acquiring basic goods and services that will meet the minimum level of standard of living. Ravallion (1999) mentions that the poverty line can be represented as a point on the cost function equating to its utility level. This utility level defines the poverty line within welfare space. More formally then,

$$u = f(y)$$

This says that utility or 'standard of living' (u) depends on income or expenditure. Thus the utility level (u_z) at the poverty line (z_i), represents the household welfare (y_i) that's needed to consume a minimum level of calorie intake which reflects some minimum level of standard of living (Crothers, 1997). The inevitable problem raised by people such as May *et al* (1995) is the restrictive nature of what constitutes 'standard of living' - in this case, calorie intake calculated in terms of income/ expenditure.

³⁶ May *et al* (1995) are among the few researchers who have made use of subjective poverty lines when undertaking the South African Participatory Poverty Assessment project during 1995-1996. For a review of absolute poverty lines, refer to May *et al* (1995) and Datt in World Bank (2003).

Given the above criticism, many utilitarians have augmented their traditional approach by including non-food commodities as part of 'standard of living'. This new adjustment was also adopted by some pursuing research on standard of living in South Africa (e.g. Heintz and Jardine (1998), Ngwane *et al* (2001) and Woolard and Leibbrandt (2001)). Ngwane *et al* (2001), for example, include cost of balanced diet and cost of essentials for tolerable human existence amongst the extra criteria that make up the basket of goods for measuring minimum standard of living.

However, before households can be ranked in terms of income / expenditure there are some methodological concerns that need to be accounted for. Households are of different sizes and have different compositions. Thus ranking households based on absolute levels of household consumption will inevitably bias the results. Therefore, before ranking can take place households have to be normalized in terms of *adult equivalence* and *economies of scale* (Klasen, 2000). Woolard and Leibbrandt (2001) point out that a household of three adults can have a composition other than a household of two adults and one child. Thus these different composition levels are going to produce different patterns of consumption. Also, a large household requires more expenditure than a smaller household to achieve the same level of consumption. To account for household size the standard normalization operation is merely dividing household consumption by household size. Households are then ranked according to household per capita consumption (Woolard and Leibbrandt, 2001). However, this transformation still doesn't take into consideration both economies of scale and different composition levels of households.

Woolard and Leibbrandt (2001) remark that large households in particular benefit from economies of scale deriving from the consumption of public goods. Thus the first transformation that is performed is the conversion of each household into adult equivalence. Household consumption is then divided by adult equivalence while adjusting for economies of scale. These normalization operations are best performed using the Engel procedure. May *et al* (1995) provide a mathematical demonstration (drawing on the Engel procedure) of the above operation. According to May *et al* (1995)

$$E = (A + \alpha K)^\theta$$

E = no. of adult equivalence ;

α – Child cost ratio³⁷

α is equal to 0.5 according to May *et al* (1995);

³⁷ One can alter the values of α and θ to check for robustness and keep share of individuals in poverty fixed at 40 %.

θ – Economies of scale parameter

θ is equal to 0.9 according to May *et al* (1995);

A = no. of adults ; K = no. of children

To find household consumption per adult equivalence household consumption is divided by the number of equivalent adults (E). After these adjustments, households are ready to be ranked in terms of the income/ expenditure approach.

(ii) Basic Needs Approach

The basic needs approach eschews the use of income/ expenditure as the poverty line. Instead a list of basic needs is enumerated. These include *inter alia* housing, education, electricity and water. Income is important to the extent that it is able to satisfy these basic needs. The poverty level is determined separately for each of the basic needs by deciding on a cut-off point, which to all intents and purposes is as arbitrary as those of the other approaches. May *et al* (1995) and to a lesser extent Stats SA (2000) adopt this approach. May *et al* (1995) thus define this poverty line as the inability to achieve a level of consumption that is required to satisfy basic needs. Stats SA (2000) on the other hand sets out to achieve the best of both worlds. They estimate the cost of a bundle of goods that will meet basic needs. However, this estimation is made in terms of expenditure and a poverty line is then derived from this approach.

The categorization of basic needs is normally ordinal in nature. Deciding a cut-off point can therefore be an exceedingly hazardous affair. For example, take the basic need of water supply. This basic need consists of five categories: from piped water in the dwelling (rank 1) to deriving one's water supply from dam/river (rank 5)³⁸. In between the options are piped water on premises (2); public tap (3) and borehole/ well (4)³⁹. How does one decide in terms of the basic needs approach what the cut-off point should be? Klasen (2000), in measuring poverty using a Core Deprivation Index, defines two 'deprivation lines'. These deprivation lines are established based on 40 % cut-off (severe deprivation line) and 20 % cut-off (deprivation line). Thus if we take the water supply basic need, should 40 % of the population derive their water supply from the two last categories (i.e. dam/ river and borehole/well) then the deprivation line will be located at the category with rank 4. Thus those with rank 4 (borehole / well) and more (i.e. including rank 5) are considered to be poor. Similarly, should 20 % of the population derive their water supply from dams/ rivers, then the severe deprivation line will be situated at the category with rank 5. Thus those with a rank of 5 are considered severely

³⁸ A Rank of 1 refers to achieving the best possible score whilst a rank of 5 represents the worst score.

³⁹ These categorizations are taken from the census 1996 dataset.

deprived. Klasen (2000) is quite astute by adopting this approach since instead of motivating a particular cut-off point, the cut-off points are already decided based on the distribution of the population on a particular basic need. Nevertheless, the 20 % and 40 % cut-off levels, despite conforming to convention in the mainstream literature are still somewhat arbitrary in nature.

5.4.2 SHORTCOMINGS OF ESTABLISHING POVERTY LINES

Crothers (1997) is of the view that many poverty line studies are not carefully calibrated against real world experience. He states that poverty lies on a continuum and cannot be reflected by an arbitrary point within welfare space. Ravallion (1996) believes, however, that it is in fact an advantage to have the poverty line represented by a point in welfare space. Despite his support for this view, he nevertheless provides no justification for it. One can only assume that he is implying the efficacy of specifying a poverty line in the measuring/mapping of poverty. Qizilbash (2002) acknowledges that measuring poverty using a broad –conception (which includes material and non-material needs) is rather more difficult. However, Ravallion (1996) writes that there are some who dislike the extra sensitivity of the location of the poverty line and the possible welfare measurement errors near it. The poverty line also has peculiar policy outcomes. Gains attributable to households situated close to the poverty line are given a premium to those that are further away. The rationale for this is that less is needed to carry them across the poverty line than those further away. The resultant outcome of this bizarre state of affairs is a decrease in the rate of poverty.

5.4.3 A POSSIBLE WAY FORWARD

It is clear from our discussion above that poverty lines are an important methodological tool necessary for mapping of poverty and making poverty comparisons over time. This has been acknowledged by practitioners in the field even amongst those who admit to their innumerable shortcomings. The approach has therefore been to find alternative ways of specifying the poverty line in order to limit these weaknesses. The development of fuzzy-set poverty measures have been one approach in attempting to provide a solution to the arbitrariness of the poverty line and the possible welfare measurement errors near it⁴⁰. The specification of the poverty lines in this approach is vague – i.e the situation of the poverty line is non-clear allowing for a range within which it can fall. Clark and Qizilbash (2003) are among the few researchers who have experimented with this approach within the poverty domain.

⁴⁰ Shorrocks's (1995) measurement of poverty is another attempt at resolving this problem. His measure is a modification of Sen's index. Shorrocks's poverty measure is distribution sensitive and is continuous at the poverty line.

They adopt the same basic needs/ capabilities concept of a poverty line. This implies a multidimensional approach where a poverty line is specified for each capability/ basic need. To them if a household is core poor in any of the poverty dimensions, such a household is classified as poor and it's not necessary to check any of the other dimensions. They define core poor as someone who scores the lowest on any of the dimensions (i.e. achieves a rank of 5). Anyone who achieves the highest rank (i.e. 1) is considered in their approach definitely non-poor. The space between these two absolute categories is defined in terms of vulnerability and indicates the extent to which a household is vulnerable on that particular dimension⁴¹.

According to Clark and Qizilbash (2003) the cut-off points are chosen from the results obtained. In this manner the choices of the threshold are determined in a similar way to that of Klasen (2000). However, they still sit with the problem of ordinality of basic capabilities. In other words the listing of the categories of each basic capability is not a measure of its value⁴². Despite this acknowledgement, they nevertheless adopt the convention by treating the categories of each basic capability as if they were a cardinal measure. The veracity of this is not clear and the impact this might have on the poverty profile has not yet been suitably established.

5.5 POVERTY MEASURES

Once a poverty line has been established and an understanding of 'living standards' has been agreed upon, the only problem left is to choose an appropriate aggregate measure of poverty. Poverty measures are important because they provide disaggregated information about the poor. Poverty measures also contribute to determining accurate poverty profiles. These poverty profiles can be used to assist government in its policies, aimed at guiding targeted transfers designed to minimize aggregate poverty (Ravallion, 1996).

There are a number of aggregate poverty measures that can be computed. Among some of the more familiar are the Headcount Index (H), the Poverty Gap ratio (PG) and the Foster, Greer and Thorbecke (FGT) test. Since these measures are used extensively in the literature, it's expedient to briefly review them (and others) at this stage before moving on to the composite poverty indices, which use multiple indicators to measure aggregate poverty and which we will be applying in our empirical investigation later.

⁴¹ Vulnerability is understood here in the sense that Clark and Qizilbash (2003) understand it. We have already elaborated on this understanding in the section above.

⁴² Using the water supply example, acquiring water from a public tap (rank 3) is not necessarily superior in terms of standard of living than getting water from a well/ borehole. Yet this is what is implied in both Clark and Qizilbash's (2003) and Klasen's (2000) studies.

A. INCOME / EXPENDITURE MEASURES

5.5.1 THE HEAD – COUNT INDEX (H)

Despite the numerous shortcomings of this measure, it still remains the most widely used aggregate poverty measure around. The World Bank (2003) believes that its obvious attraction is related to its simplicity of construction and ease of understanding. It is instructive to note that there appears consensus in the understanding and explanation of what the H index measures⁴³. According to a variety of sources in the literature, the headcount index measures the proportion of the population that lies below the poverty line (i.o.w those who are classified as poor) (Sen, 1983, May *et al*, 1995, Ravallion, 1996, Woolard and Leibbrandt, 2001, World Bank, 2003).

Mathematically we can summarise the above measure as:

$$H = \frac{q}{N} \quad (1)$$

Where

H = Headcount ratio

q = number of people living in poverty

N – total population size

(May *et al*, 1995)

An alternative way of specifying the H index preferred by the World Bank (2003) is

$$p_0 = \frac{1}{N} \sum_{i=1}^N I(y_i \leq z) \quad (2)$$

Where

Household welfare = y_i

Poverty line = z

$I(.)$ is an indicator function that takes the value of 1 if the bracketed expression is true, and 0 if otherwise

In equation 2, the indicator function, $I(.)$ would be the equivalent of q from equation 1. Equation 2 thus appears more a disaggregated depiction of the H index.

(i) Weakness

Despite its overwhelming popularity there are nevertheless a number of weaknesses in the H index. Firstly, the poverty measure is discrete. One can, therefore, just cross some

⁴³ As we shall see later, this is not always the case with other poverty measures.

income line and no longer be classified as poor (May *et al*, 1995). If a poor person becomes poorer the H index remains the same. Even more inexplicable, if someone dies (who is poor) the H index in fact improves (Ravallion, 1996). Furthermore as a welfare function, the H index violates the principle of transfer⁴⁴. Therefore a transfer from a rich to a poor person does not necessarily improve welfare, especially if such a person remains below the poverty line after the transfer occurs. Finally, the World Bank (2003) states that the H index does not account for the intensity of poverty. This objection is possibly related to the second point mentioned above. It is perhaps due to this objection that the Poverty Gap (PG) measure was formulated. We discuss this measure next.

5.5.2 POVERTY GAP MEASURE (PG)

Unlike The H index, there are substantial variations in the way the PG measure is explained. Possibly the most intuitively appealing is provided by May *et al* (1995) who state that the PG is the amount of income / expenditure needed (annually) to lift the (all) poor to the poverty line through a perfectly targeted transfer⁴⁵. According to Woolard and Leibbrandt (2001) the PG measure thus reflects the depth of poverty. Unlike the H index, the PG measure is *continuous* and *concave*. Therefore, a transfer from a poorer person to someone who's poor whereby the poor person is lifted out of poverty in fact increases the PG measure (i.e. the poor becomes worse off) (Woolard and Leibbrandt, 2001). The PG measure also shows the value of using survey information to learn about the characteristics of the poor (World Bank, 2003).

Klasen (2000) explains two ways that the PG measure can be presented. The first approach expresses the PG as a percentage shortfall (usually in expenditure terms) of an average poor individual with a certain characteristic. For example, if the characteristic is location (and our imaginary person is from a rural area), it will show the percentage increase in expenditure necessary for a rural poor person to reach the poverty line. In more practical terms, should the PG measure for example be 50 % it would mean that on average a rural person would have to increase his/her expenditure by 50 % to reach the poverty line. The second method on the other hand measures the national total poverty gap of a group of people with a particular characteristic. Thus continuing with the above sample group, it will measure the share of total PG accounted for by PG among rural

⁴⁴ The Pigou – Dalton principle of transfer referred to states that a transfer from a rich to a poor person should increase welfare (Sen, 1983).

⁴⁵ A perfectly targeted transfer implies the absence of transaction costs and disincentive effects (World Bank, 2003).

residents. Should the PG measure amount to 50% on this indicator it will inform us that half of the total PG is accounted for by the rural population⁴⁶.

The 3 concepts are closely related. The share of total poverty gap accounted for by group i is:

$$\frac{PG_i}{PG} = \frac{P_i}{P} * \frac{\overline{PIG_i}}{\overline{IPG}} * \overline{E_i}$$

PG – Total Poverty Gap ;

P - Number of Poor

\overline{PIG} - Average individual poverty gap (% increase of expenditure needed to reach poverty line)

E – Average expenditure of poverty

Share of poor accounted for by group i is:

$$\frac{P_i}{P} = \frac{PR}{PR} * \frac{N_i}{N}$$

PR – Poverty Rate

One of Ravallion’s (1996) criteria for a good poverty measure was that it should be able to account for both market and non-market goods given prices. Klasen (2000) mentions that the potential advantage therefore of money metric poverty measures such as the PG measure is that they could reflect individual material well-being if households have access to market purchase of all goods at their respective prices. However, this is rarely found in the literature and restrictions always exist whereby the measure only assesses market-related goods. Thus in terms of the *Ravallion criterion*, the PG measure will invariably fall short of providing an accurate account of material well-being of individuals. Another shortcoming mentioned often by researchers (Ravallion, 1996, Woolard and Leibbrandt, 2001, World Bank, 2003) is that the PG measure fails to take account of severity of poverty amongst the poor. For example the PG measure is able to measure the depth of poverty amongst the rural population, but is incapable of saying much about the distribution of expenditure amongst the rural poor and how changes to this distribution affect poverty of this group and in total (i.e. aggregate poverty).

⁴⁶ Another way of explaining this example is by drawing on May *et al*’s (1995) definition, which would imply that half of the total income necessary to move the poor to the poverty line (i.o.w eliminate poverty) would need to be allocated amongst poor rural residents.

Despite the popularity of the H index and the PG measure in some circles, these measures do not accurately capture poverty, because poverty measures should be sensitive to income distribution shortfall amongst the poor (Sen, 1983). At least four measures can be identified that have attempted to account for the three descriptors of poverty: namely (i.) the effects of the number of poor, (ii.) the depth of their poverty and (iii.) the distribution of poverty within the group. These measures are the Squared Poverty Gap Measure, Sen's Index, FGT test and the Sen – Shorrocks – Thon Index. These four measures can be further subdivided with the FGT test and the Sen-Shorrocks-Thon Index representing an augmented group.

Since the Squared Poverty Gap measure is merely an adaptation of the PG measure, we refer readers to Appendix V for a further explanation.

5.5.3 SEN'S INDEX

This measure was initially proposed by Sen (1983). Addressing inequality amongst the poor requires that more weight should be placed on those who are further away from the poverty line than those who are nearer to it. Sen (1983) obtains his numerical weights from ordinal information regarding relative incomes. Through this process of normalisation one arrives at the measure poverty **P** which depends on 3 parameters, namely the **H** index, **PG** ratio as a proportion of the poverty line and a Gini (**G**) coefficient of income distribution amongst the poor. Sen's index can thus be represented as

$$P = H[I + (1 - I)G]$$

The poverty measure **P** can also be expressed as a function of headcount ratio **H**, the poverty line π , and equally distributed equivalent income e^g of the poor. This modification can be represented as

$$P = \frac{H(\pi - e^g)}{G}$$

The problem with this measure alluded to by Sen (1983) himself is that it does not satisfy the adapted version of the Pigou – Dalton principle of transfer. Thus an increase in poverty measure **P** can in fact violate this condition in a number of circumstances. Deaton (1997) mentions that a further problem with the Sen Index is that it cannot decompose poverty into contributions from different subgroups. In the applied field when a disaggregated picture of poverty is sought, the Sen Index proves of very little use. It is not surprising that this index is not very popular amongst researchers in the field. The

World Bank (2003) states that this index is almost never used outside of the academic literature.

Although the Sen Index (and Squared Poverty Gap measure) fulfills the 3 descriptors of poverty (mentioned above), they nevertheless lack intuitive appeal. One can also add that an appropriate poverty measure, besides conforming to the three descriptors of poverty, should also include being flexible and easy to interpret and allow for an acceptable level of disaggregation amongst identified groups so that causes of poverty can be identified. At least two aggregate poverty measures can be identified that appear to conform to the above criteria: (i.) Foster, Greer and Thorbecke (FGT) test and (ii.) Sen – Shorrocks – Thon (SST) Index. For the sake of brevity, we will only consider the more popular FGT test here⁴⁷.

5.5.4 FGT Test

The FGT test belongs to a class of poverty measures, which can be summarized as:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^a \left[\frac{z - y_i}{z} \right]^{\alpha} \text{ for } \alpha \geq 0$$

z – poverty line

y_i – standard of living indicator. (e.g. PCE) of i th household

α – aversion to poverty parameter⁴⁸

When parameter $\alpha = 0$ we arrive at the H index and when $\alpha = 1$ the PG measure is obtained (Woolard and Leibbrandt, 2001). The above measure has other appealing features. For example the sensitivity parameter α can take on different qualities depending on its value. For example for all $\alpha > 0$ the measure is strictly decreasing in living standards of the poor, meaning the lower your standard of living the poorer you are deemed to be. With $\alpha > 1$ the measure becomes strictly convex with a fall in one's standard of living deemed greater the poorer one is. Another attractive feature mentioned by the World Bank (2003) is that the FGT test can be decomposed by population sub-groups and the contribution of each sub-group to national poverty can be calculated. It is, however, not certain what the appropriate value for α should be.

⁴⁷ Refer to Appendix V for an explanation of the SST index.

⁴⁸ As α increases, the more sensitive the measure is to well-being of the poorest

B. COMPOSITE POVERTY MEASURES

The aggregate poverty measures so far featured are commonly used by those who follow a utilitarian / welfarist approach. Nevertheless some of these measures can also be used (and have been used) alongside multi - dimensional poverty measures. Clark and Qizilbash (2003) in fact make use of the H index, which in their case measures the proportion of the population that is *core poor*. Klasen (2000) again adopts a dualist approach where he juxtaposes poverty profiles derived from these traditional income/expenditure measures with his own multi-dimensional poverty measures. There are a number of multi-dimensional poverty measures that have been used in the literature, including the Unmet Basic Needs index, the UNDP's Human Development Index, the Capabilities Poverty Measure (CPM) and Klasen's Composite Index. Stats SA have also developed two composite indices of their own, namely the Household Infrastructure Index (HHII) and Household Circumstance Index (HHCI). In this section we only provide preliminary discussion of the Stats SA indices and Klasen's Composite Poverty Index before introducing the reader to Vague Fuzzy – Set Theoretic poverty measures, which is the latest attempt to operationalise Sen's Capabilities Approach. Refer to Appendix V which contains a summary of the rest of the composite indices referred to above.

5.5.5 HOUSEHOLD INFRASTRUCTURE (HHII) & HOUSEHOLD CIRCUMSTANCE INDEX (HHCI)

These two indices were developed by Stats SA (2000) to measure underdevelopment in different parts of South Africa. The Stats SA indices draws on the basic needs model in their methodological approach. These indices cover social, economic and demographic areas. Twelve indicators are used for constructing HHII and HHCI. The indices were isolated and identified using principal components analysis⁴⁹.

HHII and HHCI examine different aspects of poverty including inequality, underdevelopment and changes in living conditions and life circumstance over time. These indices are not mutually exclusive and can thus either be used in combination or alone. Hirschowitz (in Stats SA, 2000) for example used the two above indices to allocate funds for structural development and skills training in different provinces in the country. However, Stats SA (2000) provides a cautionary note saying that if the objective

⁴⁹ Refer to Stats SA (2000) for a discussion on how to calculate HHII and HHCI.

of provinces is sustainable development one should be careful about using these indices to allocate funds.

5.5.6 KLASEN'S COMPOSITE POVERTY INDEX

Klasen's (2000) composite poverty index falls more within the broader CPM model. Klasen's index is a multidimensional poverty measure, which attempts to capture well-being directly rather than relying on expenditure as an imperfect proxy. His measure of deprivation is a composite index of 14 components. Klasen mentions two methods that can be used to obtain weightings for the components of the index. Similar to the HHII and HHCI, weightings for this index can be obtained by putting the components through a principal components analysis. The second method is deriving the weights from the data itself. The correlation of the results obtained from these two methods is surprisingly strong ($r = 0.992$). What this implies is that identifying the weights using either method would generate a similar outcome and thus would be equally credible.

The scoring on each component follows a cardinal interpretation of ordinal rankings. Thus a score of 1 indicates severe deprivation. Also a rank of 2 is interpreted as twice as good in achievement as a rank of 1. Although Klasen uses this scoring technique he is equally vigilant about the questionability of this approach. It is not difficult to understand why this method adopted by Klasen (2000) has the same problems as the welfarist approach in measuring poverty where a cardinal interpretation of utility is posited on ordinal preferences.

When Klasen (2000) compares his broader multi-component measure of poverty with a traditional income – based poverty measure he discovers that despite there being a strong correlation in the results, the income – based poverty measure would still have overlooked 30 % of those most deprived (in terms of the Composite / Deprivation Index).

(i) Klasen's Core Deprivation Index

To test for the validity of these methodological choices Klasen (2000) implements a sensitivity analysis on the findings of his paper. He does this by constructing a Core Deprivation Index, which is an index of only seven components. These components are: education, health, housing, nutrition, water, employment and safety.

This augmented Deprivation Index attempts to measure capability outcomes directly. Klasen uses two thresholds for the index. A 40 % cut-off is chosen for those defined as deprived and a 20 % cut-off represents severe deprivation. Once having specified these two thresholds it is possible to calculate a deprivation gap measure, which is simply the

absolute gap of deprivation (or severe deprivation) of households compared to the deprivation line (severe deprivation line). Klasen (2000) claims that policies aimed at decreasing multi-faceted dimensions of deprivation can be adequately monitored and analysed using a disaggregated outcome – based measure such as the Deprivation Index discussed above.

5.5.7 VAGUE, FUZZY – SET THEORETIC MEASURES AND VULNERABILITY

The multi-dimensional poverty measures discussed so far focus on well-being and human poverty more directly than the income/expenditure-based measures. These measures therefore represent an advance on the conceptualization of measuring poverty using the traditional income/expenditure measures. Despite these positive strides however, there are still some methodological issues that need further unveiling. For example with Klasen's Composite Poverty measure the choice of threshold between the poor and non-poor appears arbitrary. Thus multi-dimensional poverty measures appear to suffer from the same methodological shortcomings as the income/expenditure-based measures discussed above. Given this recognition researchers such as Cerioli and Zani (1990), Cheli and Lemmi, (1995) have developed a framework whereby poverty measures respect both the multidimensional quality of poverty measurement and its lack of precision / vagueness of poverty. Vagueness of poverty relates to the notion that there is no clear cut borderline between the poor and non-poor. These researchers, therefore, explain this vagueness within the poverty context by drawing on fuzzy-set theory. Later Qizilbash together with Clark (2003) applies this method using data collected from three sites in South Africa. Their aim is to provide an account of both capability / well-being and an account of vagueness of poverty. However, they draw quite extensively on the measures developed by Cerioli and Zani and Cheli and Lemmi.

These two fuzzy-set theoretic poverty measures define a cut-off above which individuals are classified as definitely non-poor and thus do not belong to the set of poor. Another cut-off is defined below which individuals are classified as definitely poor and members belong to the set of poor. The space between the upper and lower bounds is ambiguous and individuals who fall within this area are classified as being poor to some degree. The fuzzy set theoretic measures can therefore be interpreted as measures of vulnerability in specific dimensions.

There are two ways that the Cerioli and Zani (CZ) (1990) statistical measure is explained in the works of Clark and Qizilbash. Both are similar but the notations adopted differ somewhat. We will follow the specification in Qizilbash's (2002) paper as it is more succinct and notationally easier to comprehend.

Cerioli & Zani (1990) write the set of poor people as A , with μ_A giving the degree of membership of A , where $\mu_A = 1$ when someone definitely belongs to the set of the poor. If she is definitely not poor, then μ_A is 0. If someone belongs to the set of poor to some degree, then $0 < \mu_A < 1$. Qizilbash (2002) makes mention that Cerioli and Zani developed their approach for the case where income is the unique focal variable, as well as the multi-dimensional case.

In the multidimensional case, Cerioli and Zani develop various measures, one of which uses the ordinal method of scoring. The scoring works so that if there are two individuals, and one has a higher level of deprivation, then that person gets the lower score. The lowest score gets assigned to the person with the highest level of deprivation. If we write P for the rank order score, then P_j' is the score at and below which someone is definitely poor in dimension j . P_j'' is the best score in dimension j , in the sense that anyone at or above it is definitely non-poor in dimension j . P_{ij} gives the score of individual i in dimension j . Individual i 's degree of membership of the set of the poor in dimension j is written z_{ij} . It is set to 1 if $P_{ij} \leq P_j'$, and to 0 if $P_{ij} \geq P_j''$. If $P_j' < P_{ij} < P_j''$, then:

$$z_{ij} = (P_j'' - P_{ij}) / (P_j'' - P_j')$$

Thus in terms of the above equation, if individual i lie half – way between the two thresholds, individual i would have a value of $\frac{1}{2}$. According to the above equation then that person would be considered 50 % vulnerable (i.e. how close individual i is from being definitely poor in the relevant dimension). Thus the understanding of vulnerability within Qizilbash (2002) and Qizilbash and Clark's (2003) framework is different from traditional notions. In other literature vulnerability is considered to be the possibility of becoming poor. Here in their case, with values ranging from 0 (definitely non-poor) to 1 (definitely poor) the vulnerable group falls within this range. What this implies is that the closer the person is to being definitely poor within the relevant dimension in terms of rank score and achievement the more vulnerable that individual is. As Qizilbash (2002: p760) explains, "The intuition is that the closer a person is to being definitely poor, the larger the number of ways of specifying a borderline between the poor and non-poor in the vague zone which would result in the person from being classified as 'poor'".

Cheli and Lemmi (1995) constructed an alternative fuzzy-set theoretic poverty measure to analyze poverty within a multidimensional framework and also avoiding arbitrary threshold measures as in the traditional approaches. Unlike Cerioli and Zani's (1990) linear approach, the Cheli and Lemmi (1995) measure is a relativist one. To distinguish their measure from Cerioli and Zani's they've called theirs *Totally Fuzzy and Relative*

(TFR). Filipone *et al* (2001) comments that relative poverty measures usually depend on a given parameter of income distribution such as the mean or the median. However TFR measures refer to the entire distribution of the considered poverty indicators (including income) and for this reason, they are considered *totally relative*. The TFR can be specified as follows (Qizilbash, 2002):

Suppose that we write variable x for dimension j as x_j , and that people are ranked according to their achievement, and are set to one for the highest ranking class or level, to two for the second highest class or level, and so on. Then $g(x_j^{(k)})$ denotes the degree of membership to the set of the poor for someone ranked, or someone in the class ranked, k in terms of x_j ⁵⁰. Cheli and Lemmi (1995) set $g(x_j^{(k)}) = 0$ for $k = 1$. Writing the sampling distribution of x_j arranged in increasing order according to k as $H(x_j)$, the degree of membership is given by:

$$g(x_j^{(k)}) = g(x_j^{(k-1)}) + \frac{\{H(x_j^{(k)}) - H(x_j^{(k-1)})\}}{(1 - H(x_j^{(1)}))} \quad (k > 1)$$

Filipone *et al* (2001) further simplifies the above equation by implementing a simple manipulation. The revised normalized version of the above formula can be presented as:

$$g(x_j^{(k)}) = \frac{H(x_j^{(k)}) - H(x_j^{(1)})}{1 - H(x_j^{(1)})} \quad \text{for } k = 1, \dots, m$$

In other words $g(.)$ takes the value 0 for the lowest category / rank defined by $k = 1$ (i.e. the lowest risk of poverty). Also $g(.)$ takes the value 1 for the highest possible rank / category where $k = m$ with m being the highest achieved value⁵¹. The specification $x_j^{(1)}, \dots, x_j^{(m)}$ therefore represents achievements of x in dimension j sorted in increasing order with respect to the risk of poverty. Those who fall within the intermediate categories, $g(.)$ take the values between 0 and 1 which depends on the empirical distribution of x_j which according to Qizilbash (2002) is normally in terms of income. However there are further adaptations that can be made should the distribution be based on monetary values. However, for the purposes of this paper, that won't be required. Despite the TFR being an effective tool for cross-sectional and intertemporal comparisons, according to Filipone *et al* (2001) the ordinal measures of the index have

⁵⁰ $g(x_j^{(k)})$ is also commonly interpreted as the Membership Function (mf) in the fuzzy sub-set of the poor (Filipone *et al*, 2001).

⁵¹ On a semantic note, specifications within dimensions are described in different ways in the literature. Some, like Qizilbash and Clark (2003), prefer to call it rank / achievement, whilst others use the concept of 'category'. These descriptors all refer to the ordinal rankings within the given dimensions and thus most importantly in our case are essentially the same thing.

no intrinsic value. This therefore makes it difficult to interpret the TFR index. Clark and Qizilbash (2003) raise the same objection in their paper. However, in terms of Clark and Qizilbash's (2003) framework the biggest drawback of the TFR index concerns the relativist aspect of the random distribution. According to them (2003) Sen understands poverty as absolute in the space of capabilities and functionings and hence attempting to use the TFR index with a Sen-like approach might not be appropriate. They admit however that direct measures with a relativist component (like the TFR index) can sometimes be useful.

Finally Clark and Qizilbash (2003) adopt the Borda score to develop an aggregate or composite index of the different dimensions of poverty. This choice follows a similar approach adopted by Klasen (2000) in his attempt at formulating a Composite Poverty Index. Despite the usefulness of adopting the Borda score for this purpose, Qizilbash (2002) acknowledges that there are limitations with using this method. For example according to the results from Qizilbash's (2002) empirical study, the Borda ranking will make one believe that there was very little poverty and vulnerability in Gauteng (South Africa) during 1996. This, according to Qizilbash, is misleading. He proposes that in addition to using the Borda scoring one should also make a disaggregated examination of well-being across dimensions of poverty.

(i) Aggregation

Two types of aggregation operations occur. The first type of aggregation gathers all the information present in the information set into a single index P , representing overall well-being. The second aggregation operation is performed on a subgroup of poverty indicators, referred to variously in the fuzzy set literature as either *dimensions* or *functionings* (Cheli, 1995, Chiaperro - Martinetti, 2000, Filipone *et al*, 2001, Fusco, 2003)⁵². A membership function for each indicator needs to be specified and a weight structure for the indicators chosen before aggregation can proceed (Cheli, 1995).

Cerioli and Zani (CZ) (1990) and the Cheli and Lemmi (CL) (1995) relativist measure are the traditional measures used to define membership functions. These measures are applied to various types of variables *inter alia* categorical, dichotomous and continuous variables. However, when the CZ and CL measures are applied to the latter two, their membership functions have to undergo minor modifications⁵³.

⁵² Housing conditions, ownership, durable goods etc are some of the more recognizable dimensions of overall well-being.

⁵³ Since Cerioli and Zani (1990) and Cheli and Lemmi (1995) measures have already been discussed extensively in the previous section, we merely make mention of these measures here to demonstrate their place within the aggregation process.

Once membership functions have been defined, a decision on an appropriate weight structure has to be made. Two frameworks exist within which to view the choice of weighting structure and the overall process of aggregation. Chiaperro - Martinetti (2000) employs the first framework by using operations traditionally found in crisp set theory. In this framework indicators and dimensions are aggregated using intersection and union operators. For each operator, there are three typologies. These are: (i) *Standard / Strong*, (ii) *weak* and (iii) *bounded difference*. These typologies also satisfy different axiomatic structures⁵⁴. The union operator focuses on the most favourable position and selects the highest membership grade whereas the intersection operator assesses the least favourable position by selecting the membership grade with the lowest value. The advantage of adopting this approach is that it provides the aggregation process with a sound theoretical grounding. However, despite this obvious advantage, this framework is rarely used in the poverty theoretic literature. It appears to lack intuition and natural appeal. Deciding upon any of the typologies requires certain assumptions to be made in terms of its axiomatic structures, which may be too precarious and unwieldy for some.

The second framework used in the literature is derived from the work of Cerioli and Zani (1990) and Cheli and Lemmi (1995). They specify a frequency-based weighting system whereby weights are directly derived from membership functions. In their approach

$$w_j = \ln\left[\left(\frac{1}{\bar{u}(x_j)}\right)\right]$$

where $\bar{u}(x_j) = \left(\frac{1}{n}\right) \sum_{i=1}^n u(x_{ij})$, represents the proportion of the poor with reference to X_j .

The weight, w_j is modelled as a decreasing function of deprivation. It says the more an attribute is present in the population the more important it is, therefore the weight of the indicator would be larger (Ngwane *et al*, 2001). Filipone *et al* (2001) points out that the obvious drawback with the frequency-based weighting system is that $\bar{u}(x_j)$ is not defined at 0. This means that although the function is continuous in the open interval between 0 and 1, it lacks this quality at the extremes. Filipone *et al* (2001) nevertheless go on to argue that this discontinuity is not really a problem since items owned by everyone (e.g. a pair of socks) or by nobody (e.g. a submarine) will hardly be chosen as indicators of poverty.

⁵⁴ See Dubois and Prade's (eds) (2000) excellent monograph entitled "Fundamentals of Fuzzy Sets (Vol I) for those who are seeking a comprehensive and exhaustive treatment on lattice and axiom structures of fuzzy set operators.

There are also other weighting functions that are consistent with the relative deprivation principle. For example, equal weights can be allocated to each of the dimensions⁵⁵. This weighting scheme is used by the UNDP for calculating the Human Development Index (Cheli, 1995). However, the above weighting system is preferred because w_j is at its minimum at 0 and taking the logarithm of $1 / \bar{u}(x_j)$ instead of just $1 / \bar{u}(x_j)$ allows one to desist from giving excessive importance to rare poverty symptoms.

Since there is no underlying theory with which to guide the aggregation process, the problem before us is; does choosing different weight structures affect the outcome of ones results? Filipone *et al* (2001) shows, using different weight measures, that choices relating to weight structures have a negligible influence on the outcome of ones results. This conclusion might indicate robustness of weighting schemes. However, a potential mitigating factor to this conclusion is that it might be sensitive to the dataset being used. Thus further work needs to be carried out to establish whether Filipone *et al*'s (2001) findings are replicable.

Once membership functions have been defined and weighting schemes decided upon, the aggregation process may begin. In terms of the frequency-based approach, k membership functions are weighted to arrive at a new membership function. Such a global membership function is defined as:

$$f(x_i) = f(x_i, \dots, x_{ik}) = f(x_i) = f(x_i, \dots, x_{ik}) = \frac{\sum_{j=1}^k \mu_{ij}(w_j)}{\sum_{j=1}^k w_j}$$

where $w_1 \dots w_{ik}$ represents the system of weights and μ_{ij} the specific deprivation of item j .

The above index is known as the individual index of global poverty (IGP). It represents the fuzzy proportion of the poor that belong to the fuzzy set and is therefore a fuzzy approximation of the headcount ratio. There are a number of reasons for the deciding on coming up with a global index of poverty. Firstly, such an index relates to an overall evaluation of well-being (Filipone *et al*, 2001). One can therefore compare different geographical areas (and other area characteristics) with one another based on this index of well-being. Secondly, the well-being measure contains information that can be used by policy-makers to inform the design of socio-economic policies aimed at the steady decrease of the main causes of poverty. When specific indices agree, a global index also

⁵⁵ See Appendix I for other specifications.

gives a synthetic representation of a particular phenomenon (Cheli, 1995). Although the qualitative results remain very much the same, the index is nevertheless sensitive to the weight system selected. Thus care must be exercised, if it's decided, to interpret the index in absolute terms.

5.6 CONCLUSION

Fuzzy-set theoretic poverty measures are indeed a promising multi-dimensional methodological framework within which to view Sen's capabilities approach. The critique above suggests that it has the potential to overcome some of the methodological 'bugbears' that have plagued poverty researchers in South Africa. However, very little work exists in South Africa that has seriously tested this methodology. Despite cautious optimism that this approach can advance our understanding of poverty in South Africa, some inadequacies, such as a sound underlying theory for guiding aggregation, the choice of weighting structures and interpretation of aggregate measures still remain to be addressed.

University of Cape Town

CHAPTER VI

THE KHAYELITSHA – MITCHELL’S PLAIN MAGISTERIAL DISTRICT – AN IDP CASE STUDY FROM THE WESTERN CAPE PROVINCE

6.1 BACKGROUND TO KMP MAGISTERIAL DISTRICT

The KMP magisterial district consists of 30 % of the population of the Cape Metropolitan Area and is situated between the two cities of Cape Town and Tygerberg. Khayelitsha includes other established townships, such as Nyanga, Gugulethu and Langa as well as informal settlements such as Crossroads and Brown’s farm (SALDRU, 2003). Khayelitsha is of special significance though, since it is the youngest of all the other townships in the area, with the first houses for Africans being built there in 1984. However, since Khayelitsha is situated close to the ocean, the houses built there are located on sand dunes (Townships of the Cape Flats, 2004). Mitchell’s Plain is the other major area situated in this magisterial district. It was established in 1973 and was intended to house the middle-income coloured population. However, in a very short space of time the area deteriorated into a sprawling slum, with many people wanting to escape the poorer township areas coming to stay in Mitchell’s Plain but unable to afford living there (Townships of the Cape Flats, 2004).

6.2 URBAN RENEWAL PROGRAMME

According to the 2001 labour force survey (Census in Brief, 2001), the Western Cape as a whole has an unemployment rate of 18.4 % (according to the strict definition), whilst for KMP it is 28.4 %, which is more than 50 % higher than the provincial average (Nattrass, 2002)⁵⁶. In 1993 KMP experienced a housing crisis, with a backlog of 40 000 housing units waiting to be built. These and other socio-economic problems in KMP drew national attention, and in February 2001, it was nominated as one of only eight Presidential Urban Renewal Programmes. Within these renewal nodes government aims to bring all spheres of administration together in an integrated and coordinated manner so that the widespread poverty and underdevelopment can be properly addressed. The high priority focus of these programmes aims to put these nodes, on a higher growth trajectory that would make them in the future, major economic players in the country (Department of Transport, 2002). Projects considered for an urban node like KMP, would focus on improving law enforcement and the criminal justice system, whilst also encouraging

⁵⁶ The strict definition includes those job seekers who are actively seeking work whereas the ‘broad’ or ‘expanded’ definition includes the non-searching unemployed as well (Nattrass, 2003).

participation in SMMEs. However, the City of Cape Town IDP document (2004) indicates that the establishment of business improvement districts and law enforcement have become the dominant policy instruments in Urban Renewal areas, while eradicating poverty and building sustainable livelihoods have been badly neglected (The City of CT IDP, 2004).

6.3 DEMOGRAPHICS

According to table 6.1, KMP has an overall population of just over 800 000, of which 52.14 % are females and 47.86 % males. The City of Cape Town, which includes 9 magisterial districts (PDC, 1998), boasts a population size of nearly 2.9 million, with a similar male: female ratio. The population of the Western Cape stands at 4.5 million, which is about 10 % of the national population, with a similar gender distribution.

Table 6.1 Share of Population by Gender (Census 2001)

	Khayelitsha – M.P	Cape Town	Western Cape	South Africa
Male	385 994 47.86	1 389 228 48.02	2 192 356 48.46	21 434 043 47.82
Female	420 583 52.14	1 504 023 51.98	2 331 980 51.54	23 385 736 52.18
Total	806 577	2 893 251	4 524 336	44 819 779

Key: Person Weighted

Table 6.2 shows the share of the population by race. Nearly 55 % of the population in KMP are Black African, whilst approximately 45 % are coloured. There is also a very small proportion of residents in KMP who are Asian (0.4 %) and White (0.19 %). Within the Cape Town metro, distribution is differently apportioned. Most of the people living in the unicity are coloured (48.13%). This is not altogether unsurprising given the coloured labour preference policy practiced by the previous Apartheid government in Cape Town and the surrounding areas. Black Africans represent the second largest race group in Cape town, which is just under a third of the overall population. Almost two thirds of the overall population of the Province reside in the Cape Metropole.

Table 6.2 Share of Population by Race (Census 2001)

	KMP	Cape Town	Western Cape	South Africa
Black African	54.83	31.68	26.69	79.02
Coloured	44.58	48.13	53.91	8.91
Indian / Asian	0.40	1.43	0.99	2.49
White	0.19	18.76	18.41	9.58

Key: Person Weighted

6.4 IDP PROCESS IN KMP

Research conducted by Kehler (2000) investigated the IDP process in some areas of Khayelitsha, such as Site B, Harare, Sections A and C and also in two rural areas in the Eastern Cape. Sections A and C in Khayelitsha, are areas characterized by two-roomed houses built by the city council during the 1980s. Harare was established in the 1990s to accommodate most of the squatters who lived in Green Point, near Khayelitsha. This area is similar to Site B, with tarred roads and flush toilets but only a limited amount of formal housing (Kehler, 2000).

Kehler (2000) found that the majority of respondents (78 %) from the Khayelitsha areas indicated that the local council had not delivered any services within the previous 12 months. This compared to 63 % for the entire sample. Few mentioned electricity and roads as areas where delivery had been effected. About 45 % of respondents mention that women were involved in local council affairs. A massive 94 % of respondents felt that members of the community should participate in the council activities and that they had the skills to do so. Being well informed was considered one of the criteria for them to be able to participate fully. In the Khayelitsha areas, council used mostly loudspeakers and thereafter, public meetings to communicate with the public. The degree of access to information and therefore opportunities for community participation has a direct bearing on socio-economic development.

Kehler's (2000) research finds that there is a growing mismatch between community needs as perceived by the community members and those of council and its representatives. In the IDP process, community should play an integral role from the early stages through to the final stages. However, 80 % of respondents thought that they were not involved in the initial stages (needs assessment, budgeting, planning etc) of the IDP process.

6.5 IDP PROCESS IN CITY OF CAPE TOWN

A raft of discussion documents and briefing papers has been released over the past 10 years, each spelling out the future vision for Cape Town. Essentially, these documents discuss the economic development strategy for the city for the forthcoming years⁵⁷, but

⁵⁷ See CMC (2001) Towards an Economic Development Strategy for the City of Cape Town

others address the important question of land use planning⁵⁸. All these strategies have been filtered into and brought together in the city's *Integrated Development Plan* (2004).

The City of Cape Town recently issued a brochure (March, 2004), which encapsulates the input that has gone into the IDP process. Various stretch targets for the city for the year 2020 have been formulated. The main stretch targets for 2020 are:

- Ensuring that less than 5 % Capetonians live in Informal Settlements
- Providing electricity, water and sanitation for all
- Achieving a 90 % reduction in violent crime
- Reducing unemployment to less than 8 %.
- Bringing down illiteracy rates to under 5 % and
- Having the household average income per capita doubled

(Source: The City of Cape Town IDP, 2004)

In a speech at the launch of the city's IDP, the mayor mentioned that the city needs a GGP growth rate of 5 -- 6 % per annum to achieve doubling of HH average income per capita. However no explicit mention is made of giving people their dignity/ pride/ removing shame, which according to the capabilities approach, are important non-material aspects of well-being.

Six strategies are outlined to create a better city. These strategies also form the central axis of the IDP. They are: (1) Shifting urban growth to the urban core, (2) Improving existing settlements, (3) Building competitive advantage, (4) Creating sustainable jobs, (5) Building strong communities and lastly (6) Improving access and mobility.

6.5.1 SHIFTING OF URBAN GROWTH TO URBAN CORE

The city's IDP proposes decent housing close to job opportunities, which is envisaged to decrease crime rates and ameliorate other social problems. The proposed housing sites is expected to have access to good infrastructure/ social facilities and employment opportunities. It is expected that these locational advantages will also assist low-income families by reducing the distances they have to travel to work.

6.5.2 IMPROVING EXISTING SETTLEMENTS

⁵⁸ CMC (2000) Good Practice Lessons and case studies for the economic development services: Management and Development of Public Land and Property

The city's IDP aims to address unemployment, ill-health and crime in existing settlements. Part of the strategy is to turn poor areas into dignified living spaces with amenities and public space. Special emphasis is being placed on the presidential urban renewal programme, of which Khayelitsha/ Mitchell's Plain is part. It is expected that in Atlantis and Khayelitsha, business districts will be built, improving employment prospects in these impoverished areas.

6.5.3 BUILDING COMPETITIVE ADVANTAGE

The city aims to attract investment by promoting its natural beauty and pleasant environment, good infrastructure and high quality of life. An emphasis is also being laid on reducing red – tape, improving safety and security and building an effective and efficient transport system. Commercial opportunities that are being targeted for special attention include oil and gas supply, call centres and medical services. The sectors that are leading performers in Cape Town include information technology, finance and communications. Further growth in these sectors is expected. The city also hopes to open up new opportunities for employment and skills development by opening a new film studio⁵⁹.

6.5.4 CREATING SUSTAINABLE JOBS

The city envisages the creation of 100 000 jobs in the next five years. Public works programmes are being promoted in a strategy to draw in unskilled workers. The draft IDP proposes an integrated approach to job creation with links to potential growth sectors such as those currently being strengthened. The IDP puts emphasis on learnership programmes, which have historically served as a means of transferring knowledge and skills from the mentor to the intern. This time - honored practice has been sadly on the wane for a considerable time. The IDP hopes to see a revival in this important practice.

6.5.5 BUILDING STRONG COMMUNITIES

The Apartheid re-settlement policies served to create unstable communities. This suited the then ruling party because communities were unable to mobilize themselves effectively. The IDP aims to change this by emphasizing the importance of self-reliant and cohesive communities. One aspect of this cohesiveness is empowerment of the community by providing support and strengthening community initiatives. There are, however, two major social challenges (amongst others) that confront the city. These are youth development and health related illnesses such as HIV/AIDS and T.B. The IDP emphasizes that affected children should receive proper care and support.

⁵⁹ Work on this has already begun.

6.5.6 IMPROVING ACCESS AND MOBILITY

The IDP makes it clear that poor citizens bear the cost of poor transport facilities. It further argues that better transport facilities are crucial to improve the lives of ordinary people and also increase competition. The city plans to encourage private road users to make more frequent use of public transport. To this end, a city tram is being explored, whilst the heavily congested Klipfontein corridor is to receive an overhaul⁶⁰. These six pillars of the IDP are meant to work together and reinforce one another.

6.6 QUANTITATIVE BASELINE INFORMATION FOR IDPs

The Provincial Development Council (1998) maintains that the IDP should be guided by accurate and reliable data essential to understanding the correct state of affairs and identification of strategic priorities and objectives. Thus the aim of this research is to provide reliable quantitative results on basic services and poverty indicators in KMP. This information could be used for setting targets essential for achieving efficiency gains and agreed objectives. In the absence of reliable quantitative information, provincial government has relied on community participation to acquire sound and accurate data on current service provision required in various communities. Qualitative studies (Kehler, 2000 amongst others) have discovered that an absence of community participation is one of the main features of the current IDP process. This implies that many IDP processes are based on unsubstantiated assumptions of what the current service provision requirements for that municipality are. Research of this nature fills that gap by providing the reliable quantitative information required as a basis for developmental strategies.

Furthermore, when poverty indicators at a national level are compared over time and across countries, broad trends can be identified from the information obtained. However, these are not sufficient to reveal significant local variations in living conditions. This makes small area estimates very appealing. This implies that when designing poverty alleviation projects and allocating subsidies to municipalities, resources can be used more effectively if there is better targeting.

⁶⁰ Discussion drawn from CMC Brochure (2004) and The City of Cape Town IDP document (2004).

CHAPTER VII

RESULTS

7.1 INTRODUCTION

The fuzzy-set methodology described in this paper will now be applied to data for the Khayelitsha - Mitchell's Plain magisterial district obtained from the census 2001 survey⁶¹. The entire sample survey only became available recently and hence is the latest available information pertaining to the KMP area. Information on demographics, education, the labour market, migration and household services was gathered for the census survey.

7.2 BACKGROUND AND METHODOLOGY

In this examination we use eight indicators, which relate to some specific dimension or functioning with achievements associated with rank order numbers. There remains the question of how to select the core dimensions and admissible minimal critical levels in this approach. Qizilbash and Clark (2003) employ survey methods to establish the details concerning these choices.

7.3 CHOOSING CORE DIMENSIONS OF POVERTY

Although Clark and Qizilbash (2003) refer to these as 'core dimensions of poverty', we adopt a slight modification by referring to them as indicators. These indicators however will be grouped into categories, which we will refer to as dimensions or functionings.

According to Qizilbash and Clark's (2003) research, the indicators identified by respondents are: (*Subjective scale*) housing/shelter (1), food (2), Water (3), Work/jobs (4), Money/Income (5), Clothes (6), Education/Schools (7), Health/Health care (8), Electricity/Energy (9), Safety & Security (10), Transport/car (11), Family & Friends (12) and Sanitation (13). Drawing on the findings of Clark and Qizilbash (2003) and Qizilbash (2002) we identify 8 core indicators of well being for our study. They are: (1) housing/ shelter; (2) water; (3) job situation; (4) sanitation; (5) refuse removal; (6) educational achievement; (7) rooms per household and (8) household income. These core

⁶¹ Appendix II contains a list of areas that comprise the Khayelitsha - Mitchell's Plain magisterial district.

indicators meet the admissible specifications of poverty. What is interesting is that only a few of these – housing, clean water, education and employment can easily be related to published data (Clark and Qizilbash, 2003).

It would be useful to also have information on nutrition and health as Sen and others include this as important capabilities. Unfortunately no information on nutrition and health was gathered for the census 2001. Furthermore, census 2001 also has no information pertaining to expenditure. However, information on income is available. Although the literature provides an extensive treatment on the weaknesses of using income as a proxy for living standards, we nevertheless include it for illustrative purposes, bearing in mind all its shortcomings. Furthermore, some important non – material needs that rank as core according to Clark and Qizilbash (2003), like freedom, self – worth and respect, survival and religion would be important to include in any list of dimensions. However these non-material needs are not considered here because we have no reliable data on them.

In their original form, some indicators have up to 10 modalities. This is extremely unwieldy to work with. Indicators were subsequently adjusted by removing outliers and merging modalities where this seemed reasonable and in accordance with standard practice. These adjustments aim to also bring about a more precisely defined picture of well-being assessment in terms of each of the selected indicators.

Based on the core indicators selected, three dimensions can be identified. They are: *housing and services*, *socio - economic* and *monetary*. Table 7.1 lists the indicators that comprise each of the above dimensions.

Table 7.1 Indicators and Dimensions of Deprivation

1. Housing and Services

- 1.1 Dwelling
- 1.2 Water Supply
- 1.3 Sanitation
- 1.4 Refuse
- 1.5 No. of Rooms

2. Socio – Economic

- 2.1 Work / Jobs
- 2.2 Schooling

3. Monetary

- 3.1 Income

All of the above indicators are categorical in nature. Comparisons between different dimensions can thus be made without any concern for problems about standardization. Income is also taken as the sole indicator for the monetary dimension.

7.4 MEMBERSHIP FUNCTION AND MINIMAL ADMISSABLE LEVELS

The first step when implementing the fuzzy – set measures is to identify and define the membership function. Clark and Qizilbash (2003) come up with their membership function based on their survey findings. However, the membership function representing some indicators is sometimes ambiguous. For example, the sanitation dimension has 6 pre-determined modalities. According to survey results, a latrine is considered to be ranked higher than an improved pit latrine. Furthermore, according to the housing indicator, a protected spring well or borehole is ranked higher than a dam or standing water. Yet according to the survey results the opposite result is obtained. These ranking ambiguities coupled with the different labelling of modalities indicate that the Clark and Qizilbash (2003) membership criteria require further refining before it can be reliably used by others. Instead we follow Qizilbash (2002) and Chiaperro - Martinetti's (2000) example who defined the membership function as

= 0 for the **highest** modality, that is definitely non-poor and does not belong at all to the M.F and

= 1 for the **lowest** modality, representing definite poverty and belonging completely to the M.F

The choices that fall between this range, that is $[0, 1]$, are considered as belonging to the set of poor to some degree. We also follow Qizilbash's (2002) directive by treating any number above or equal to 0.7 (or 0.65 for two decimals), but less than 1 as signifying *extreme vulnerability*.

Clark and Qizilbash (2003) argue that the above criterion in deciding the minimum critical levels is somewhat arbitrary and thus suffers from similar shortcomings of other multi-dimensional approaches. Although it must be acknowledged that there is some truth in this, however the categories of the indicators chosen in the Qizilbash (2002) paper are properly specified and the upper and lower limits are clearly identifiable. Furthermore the fuzzy-set measures, especially the relative measure of Cheli and Lemmi puts aside all normative assumptions concerning thresholds and derives deprivation indices directly from the distribution function of the variables analysed (Cheli, 1995).

These methodological structures offset to some degree the arbitrariness found in much of the other multidimensional work on poverty.

We use both the Cerioli and Zani (CZ) (1990) and the Cheli and Lemmi (CL) (1995) measures to define our membership functions. The CZ measure is an absolute assessment of poverty whereas the CL measure is derived from the actual distribution of the various poverty dimensions and hence paints a relative picture of poverty occurrence. Finally we employ an ordinal method of scoring where someone with a higher level of deprivation is apportioned a higher score⁶².

7.5 RESULTS

Table 7.2 Educational Achievement in 2001

	Rank	V _{cz}	V _{cl}	KMP %	City of Cape Town %	Western Cape %	South Africa %
No schooling	Rank 6	1.00	1	6.33	4.20	5.73	17.93
Some Primary	Rank 5	0.80	0.81	14.73	11.80	15.20	16.03
Grade 7/standard 5	Rank 4	0.60	0.63	9.13	7.10	7.90	6.37
Some Secondary	Rank 3	0.40	0.56	45.90	38.88	36.53	30.80
Matric / Grade 12	Rank 2	0.20	0.22	19.66	25.43	23.41	20.42
Higher	Rank 1	0.00	0	4.25	12.59	11.23	8.45

Source: Census 2001
All unspecified categories have been excluded
Person weighted, Aged 20 and older

Educational achievement has a low core poverty/ headcount ratio (6.33 %) in KMP. A similar low headcount ratio is noticeable for both CT (4.2 %) and the Western Cape (5.73 %). However, for South Africa as a whole, core – poverty stands at nearly 18 %, a remarkably high figure for a middle-income country like South Africa. For KMP and the WC again, the vulnerability scores are quite concerning. Nearly 15 % in KMP are vulnerable in terms of both poverty measures, with similar vulnerability scores reported for the WC.

Heavy stacking is observed in the ‘some secondary’ education category. Although the stacking is highest in KMP (45.9 %), the numbers are high in all the other areas. When comparing the rank scores, the deprivation states appear similar between the two fuzzy measures with the exception of rank 3 (i.e. ‘some secondary’) where the Vcl score for this rank is 0.56 and Vcz, 0.4. In fact when we compare the Vcl scores for grade 7 (0.63)

⁶² For ordinal measures, the intervals between the numbers are not necessarily equal. For example, on a 5-point rating scale when measuring a household service like water-source, the difference between the rating of 2 and 3 may not represent the same change as the difference between 4 and 5 (Trochim, 2003). Klasen (2000) on the other hand adopts the cardinal method of scoring where the differences between ratings are equal.

and 'some secondary' education (0.56), we find that there is in fact very little difference. This suggests that going from *grade 7* to 'some secondary' education hardly changes the likelihood of one belonging to the set of core –poor. Research (Keswell & Poswell, 2002) into the return structure of education in South Africa reveals a convex curve. Whilst one cannot make any clear inferences about rates of return figures in KMP from the above data, (such an extrapolation would be spurious at best), the results show that a clear delineation between the 'some secondary' education and grade 12 categories exists. What we notice from all the rates of return literature is the way that education is commonly defined, which is usually in terms of three splines, namely *primary*, *secondary* and *tertiary* education. Preliminary evidence suggests that the pattern of rates of return would be more accurately depicted if 'some secondary education' were added as a fourth spline.

It is interesting to note that only a small proportion in KMP (4.25 %) has gone beyond grade 12. The figures for CT and SA are considerably higher at 12.59 % and 8.45 % respectively. The possible reason for the low figures for KMP might be that many do not qualify for the 'option' of post-matric studies. Only a small percentage in KMP have completed grade 12, and hence qualify for tertiary studies. Another reason might be that the opportunity cost of furthering education (compared to finding a job) for grade 12 school leavers might be too high. This implies few have the resources (refer to table 8: income) to pursue further education.

With the rates of return to grade 12 being significantly higher than 'some secondary' education (see Keswell & Poswell, 2002), policy might want to address adult education and ways of upgrading people's human capital to at least grade 12 level. The situation of extreme vulnerability is very disconcerting with 55 % (ranks 3 + 4) of those in KMP very close to falling into this category (i.t.o the Vcl measure).

Table 7.3 informs us that just over half of households in KMP reside in houses compared to about 59 % for Cape Town, with the provincial average surprisingly higher at nearly 66 %, indicating a 25 % higher non-poor ratio than KMP. Also a meagre 2 % of residents in KMP stay in traditional dwellings, and hence are core poor compared to the national average of nearly 15 %. The fuzzy set measures therefore show a very low deprivation count on this indicator. Traditional dwellings are largely to be found in rural areas, whereas KMP is predominantly urban. This difference in geographical type could also explain the large variance in the core poverty between KMP and SA. Perhaps more fundamental and significant for a predominantly urban area like KMP would be to examine the second lowest category and see if any significant deprivation may have been captured here. When we examine the second lowest achievement (i.e. shacks), we find

that just under a third of households in KMP fall into this category. This is over 60 % more than the provincial average and over 80 % more than the national average for the corresponding achievement.

Table 7.3 Type of Dwelling (Census 2001)

	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
House	Rank 1	0.00	0.00	50.90	58.89	65.34	55.85
Flat	Rank 2	0.20	0.12	4.79	9.85	7.57	5.23
Semi-detached/ Town house	Rank 3	0.40	0.19	9.23	7.01	5.70	2.85
Combination of Buildings	Rank 4	0.60	0.30	2.76	3.34	2.89	4.76
Shack etc	Rank 5	0.80	0.67	30.49	18.96	16.29	16.47
Traditional dwelling	Rank 6	1.00	1.00	1.83	1.95	2.22	14.84

Shack etc = Informal dwelling / shack in back yard and not in back yard
Combination of Buildings etc = house/ flat/ room in back yard or on shared property
Excludes make-shift accommodation. E.g. Caravan, tent, private ship or boat.
Household weighted, excluding Institutions

All essential services that go with housing, such as proper sanitation, electricity, and water supply are largely absent in both shacks and traditional dwellings. With the living experience between these two dwelling types being of a similar standard, there is a genuine case for counting shack dwellers as belonging to the set of core poverty, especially in urban areas, where traditional dwellings are rarely to be found. In this case, the deprivation scores therefore hides a significant portion of the population who, with good merit, should be classified as core – poor, yet is not picked up as such by the poverty measures. Instead, this cohort (i.e. shack dwellers) is captured as vulnerable by both fuzzy measures. The Vcz measure however, assigns this cohort with a higher vulnerability score than the relativist Vcl measure. Thus for this indicator, the Vcz measure appears to depict a more accurate picture of deprivation than the relativist Vcl measure.

Rogerson (2001) argues that strengthening the asset base of the poor should be the overriding focus in combating urban poverty. This argument suggests that housing is instrumental in boosting the asset base of the poor. In terms of Clark’s ATG, housing also constitutes a necessity to achieve a good life. The data from the above table makes clear that there is tremendous scope for increasing housing delivery in KMP, especially amongst those who reside in shacks.

Table 7.4 presents the amount of rooms occupied by each household. The vast majority in KMP (72 %) live in 1 to 4 roomed homes compared to just under two thirds for Cape Town (62 %). Only a small fraction of households (below 1 %) in KMP belong to the non-poor set. The amounts are marginally higher for CT (2.69 %) and WC (2.95 %), but

falls far short of being anything significant. Provincial and national averages are thus higher than KMP for those who are non-poor. From the data we can deduce that the majority of the homes in KMP are of medium to small in size, with a large proportion of these small dwellings being shacks with either one or two rooms.

Table 7.4 Rooms per Household							
	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
1/2	Rank 5	1	1	34.90	26.13	27.47	33.41
3/4	Rank 4	0.75	0.65	37.85	36.08	36.25	33.58
5/6	Rank 3	0.5	0.3	24.48	28.14	25.94	20.94
7/8	Rank 2	0.25	0.086	2.00	6.96	7.39	8.24
9/10+	Rank 1	0	0	0.78	2.69	2.95	3.82

Source: Census 2001
Household weighted, excluding Institutions

Core poverty on this indicator is defined as 1/ 2 bedroomed homes. Thus KMP has 25 % more core poverty than Cape Town Metro, with vulnerability scores more or less the same. Core – poverty is also higher in KMP than in the WC and South Africa as a whole. Rank score of 4 (i.e. 3/ 4 bedrooms) classified as vulnerable by both poverty measures, with Vcl (0.65) vulnerability score being less than Vcz (0.75). The lower Vcl measure implies that with a large section of the population residing in small homes, deprivation is felt less by these households because those around them have a similar level of deprivation.

The ‘*number of rooms*’ deprivation indicator complements the ‘*dwelling type*’ variable. It shows that people living in KMP stay in very cramped space, with living quarters being small and containing few rooms. The result supports the contention that KMP have a housing deficiency problem with the situation being extremely precarious for those residing in shacks.

Table 7.5 presents information on the distribution of individuals within occupational types and also the unemployment rates to be found in the selected areas. To begin with, the unemployment figures for KMP stands at 44 %, which is 50 % higher than the average within the larger immediate vicinity (i.e. CT = 31 %) and within the province (28 %) as a whole. The unemployment crisis confronting KMP reflects a similar scenario at national level where the unemployment rate stands at 43 %. In terms of Stats SA’s (2000) Household Circumstance Index (which ranks provinces in terms of those most in need of life circumstance such as employment and education), the Eastern Cape and KZN achieves the highest scores. Furthermore, based on the Census 2001 data, unemployment rates for Eastern Cape and KZN were 56.7 % and 50.5 % respectively. Thus should these

two outliers be removed from the national average, the unemployment figures for South Africa would decrease by nearly 5 %. This re-adjustment puts into context the relative enormity of the unemployment crisis in KMP.

Table 7.5 Occupation (Census 2001)

	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
Manager	Rank 1	0	0	8.14	19.97	17.22	13.33
Sales/Clerk	Rank 2	0.25	0.14	14.87	18.89	16.95	12.84
Artisan/Operator	Rank 3	0.5	0.31	16.36	15.38	15.57	14.43
Elementary work	Rank 4	0.75	0.5	16.93	15.02	22.69	16.09
Unemployed	Rank 5	1	1	44.00	31.00	28.00	43.00

Key:
 Manager etc = Legislators, senior officials, managers, professionals, technicians & assoc. professionals
 Sales / Clerk = clerks, service workers, shop and market sales workers
 Artisan / Operator = skilled agricultural and fishery workers, craft and related trades and workers, plant and machine operators and assemblers.
 Also excludes Institutions. Person weighted, 15 – 64 EAP
 (All unspecified categories have been excluded)
 Unemployment = unemployed / (Total EAP – Undetermined)

When the occupational categories for KMP are examined, one notices that most of those employed (nearly 60 %) are clustered within the bottom two occupational categories. The same trend is apparent for South Africa, whilst this pattern is not so obvious for Cape Town or the Western Cape. For KMP and SA, the data appears to be picking up symptoms of some kind of bifurcation in the labour market. This is interesting because both May (1998) and Isemonger and Roberts (1999) claim that a dualist labour market is operating in South Africa. According to them, the poor generally operate in a secondary market, which is described by May (1998) as being ‘highly distorted, with wages low and employment insecure’. In terms of this definition, the bottom two occupational categories could feasibly belong to this ‘secondary labour market’. thus explaining why so few residents from KMP are able to cross over from the bottom two into the top two occupational categories⁶³.

Only 8 % of KMP residents fall into the non-poor fuzzy-set. The greater CT average stands at 20 % whilst even nationally, the non-poor ratio is higher than KMP at around

⁶³ *Skilled agricultural and fishery workers* are included within the largely unskilled / semi – skilled Artisan / Operator category. This anomaly might suggest that skilled workers are in fact to be found in the secondary labour market. However Bhorat and Leibbrandt (2001) demonstrate that amongst those who are employed, agricultural worker has one of the lowest levels of earnings. In light of their results, they therefore question the appropriateness of the ‘*skilled agricultural and fisheries workers*’ description for this category. Bhorat and Leibbrandt (2001) therefore advise that to avoid the erroneous assumptions about occupational earnings, ‘*independent farm and fisheries workers*’ would be a more apt description for this employment category.

13 %. Assuming the H.C theory holds⁶⁴, this low non-poor ratio for KMP could potentially be a reflection of the low matric and post-matric qualifications amongst KMP residents (refer to table 1: educational achievement). Moving onto the fuzzy poverty measures, the category with a rank score of 4 (i.e. Elementary work) is appraised as vulnerable by Vcz, but not by the relativist Vcl. According to Vcl, with the high unemployment levels present in KMP, having a job (of whatever sort) is sufficient to place that person far from the set of those who are core poor. We know that there is generally a category of workers at the bottom end of the labour market that is variously described as the '*working poor*'⁶⁵. Whilst the Vcz captures this cohort as vulnerable, the Vcl measure, however, fails entirely in picking up this cohort. Thus Vcz may therefore provide a more accurate summary of the deprivation situation within KMP (for this indicator) than Vcl.

In terms of the capabilities approach, unemployment is more than just income loss that can be made up by a transfer by the state. The net effects of unemployment include loss of self-reliance, self – confidence and affect psychological and physical health (Sen, 1999), whilst May (1998) reports that the social costs include potential violence and gender abuse. When we turn our attention back to the data, two inferences can be extrapolated from it. First, serious attempts must be made to kick-start job creation programmes in the KMP area. The jobs created must be at a level that takes advantage of the current human capital (HC) level of those residing in KMP, with the potential for upskilling and H.C accumulation over time. Public works programmes could potentially fill this much needed gap. Second, the data indicates that those employed in KMP lie at the bottom end of the labour market. It is, therefore, a possibility that these workers may be operating in a secondary labour market, which would mean prospects for upward mobility remain weak. Whilst nothing concrete can be said about the levels of HC of these workers, table 1 (educational attainment) reveals heavy clustering occurring within the 'some secondary education' category. In general, further H.C accumulation would significantly boost the mobility of these workers.

KMP performs remarkably well on the 'refuse disposal' indicator, with nearly 92 % of the population receiving weekly refuse removals. Disposal services are also similarly high in the City of Cape Town (94.17 %) area and for the provincial locality (87.43 %). On the national front however, the picture is appreciably different, with just under half

⁶⁴ According to the Human Capital theory, production, and thus earnings of a worker are directly related to the amount of human capital possessed by that individual worker (See Mincer, 1993). Investment in education is thus seen as no different to investment in physical capital.

⁶⁵ Those who do not earn sufficient income from their work to meet their basic needs.

the population not receiving weekly removals. Nationally a significant proportion has their own dump, with nearly 9 % of the population without any disposal arrangement.

Table 7.6 Refuse Disposal (Census 2001)

	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
Weekly Removal	Rank 1	0.00	0	91.08	94.17	87.43	55.28
Less Frequent	Rank 2	0.25	0.04	1.02	1.22	1.12	1.75
Communal Dump	Rank 3	0.50	0.08	1.88	1.26	2.27	1.80
Own Dump	Rank 4	0.75	0.81	3.12	1.96	7.73	32.64
No Removal	Rank 5	1.00	100	2.90	1.39	1.45	8.53

Key:

Household weighted, excluding Institutions

Weekly Removal; Removal by local authority at least once a week

The two poverty measures are akin to each other, but deviate quite remarkably within ranks 2 and 3. In terms of the Vcl measure, those who have access to a communal dump or have their disposal picked up by the local authorities (less frequent than once a week) are far from those who are core-poor. In fact they belong nearly completely to the non-poor set. There might be those who question whether there can be such a radical difference in deprivation between a communal dump and having a dump of one's own. However what the figures reflect is the nature of the distribution where very few households are core poor at the one end, and most households are non-poor at the other end of the distribution. At the same time, a small proportion of households fall into ranks 2 and 3, making their contribution less significant in the distribution.

The 'refuse disposal' indicator poses no pressing policy problem in KMP, nor in greater CT or in the province as a whole. Surprisingly, at national level, service provision related to this service indicator, is seriously defective. A large proportion of the population (32.64 %) have their own dumps. Whilst this arrangement might pose no real threat, unserviced dumps can cause serious health hazards, especially if toxic waste is disposed in them⁶⁶. Health is a crucial asset to those who are poor (Bloom and Sachs, 1998). Illness or even death from exposure to toxic waste can have a serious impact on well-being.

The majority of households in all the areas have access to a toilet of some kind. Nearly 80 % of those residing in KMP have access to a flush toilet. Whilst this figure is moderately lower than the provincial (86.21) and city (87.24 %) averages, it is still significantly better than the national average (52.71 %). Most of the remaining

⁶⁶ See article published by the Environment Justice Networking Forum entitled 'Landfill Sites' (2004).

households in KMP have access to either a bucket latrine (9.7 %) or are without any sanitation facility (9.7 %). Again, categories with rank scores of four and five may be picking up dwelling effects, with shack dwellers more likely only to have access to an outside sanitation facility (if such a facility exist), like a pit latrine, for example. The national picture presents one with a starker reality.

Table 7.7 Type of Sanitation facility (Census 2001)

	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
Flush Toilet etc	Rank 1	0.00	0.00	79.06	87.24	86.21	52.71
Chemical toilet	Rank 2	0.25	0.04	0.38	0.23	0.33	1.94
Pit Latrine etc	Rank 3	0.50	0.63	1.15	0.86	2.08	28.01
Bucket latrine	Rank 4	0.75	0.71	9.70	4.43	3.69	3.97
None	Rank 5	1.00	1.00	9.70	7.25	7.68	13.39

Key:
Household weighted, excluded Institutions
Flush toilet etc = flush toilet connected to sewerage system and with septic tank
Pit latrine etc = pit latrine with ventilation & without ventilation

According to our poverty measures, the overwhelming majority in KMP (79.06 %) are non-poor, whilst nearly 10 % are part of the core – poverty set. Furthermore, an appreciable amount of residents (9.7 %) are vulnerable according to both fuzzy measures. Once again, we notice a large difference in the Vcl measure between rank score 3 (pit latrine etc) and rank score 2 (chemical toilet). However, in this instance, the large difference in relative deprivation we find from moving from a pit latrine to a chemical toilet makes more sense, and thus the relative scoring on the above indicator (for Vcl) may not be entirely unreasonable.

Whilst the majority of residents fare reasonably well on the sanitation indicator, it is nevertheless remarkable that about one tenth of KMP households do not have access to any sanitation facility at all. It is widely accepted that proper sanitation facilities are integral to having a healthy environment, whilst at the same time keeping many diseases at bay. It is suggested that housing development would most likely eliminate much of the clustering occurring in ranks 4 and 5, and at the same time bring households into the non-poor set.

Table 7.8 shows that just over half of KMP residents have access to piped water inside the dwelling and about a quarter with piped water on the premises. Cape Town Metro and WC figures for these two categories are higher than KMP with about 25 % more residents in both CT and WC enjoying piped water in the dwelling. Compared to the

national estimates for the non-poor set, KMP is comparatively better off, with only a third of the national population belonging to the non-poor set compared to over a half for KMP.

Table 7.8 Main Water Supply (Census 2001)

	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
Piped water in dwelling	Rank 1	0.00	0.00	53.53	69.95	68.12	32.98
Piped water on premisses	Rank 2	0.25	0.46	25.16	15.27	17.88	30.66
Public Tap etc	Rank 3	0.50	0.80	21.02	14.55	13.32	23.30
Borehole, Well etc	Rank 4	0.75	0.87	0.18	0.12	0.30	4.88
Dam, river etc	Rank 5	1.00	1.00	0.10	0.11	0.37	8.19

Key:
Household weighted, excluding Institutions
Public tap etc = Piped water on community stand nearer and further than 200m.
Borehole, Well etc = Borehole, Well and rain-tank tank
Dam, River etc = Dam/pool/stagnant water, rive/stream and water vendor

The scores on the fuzzy measures make for some interesting reading. Whilst achievement with rank score of 4 is identified by both poverty measures as vulnerable, rank score of 3 only is captured by Vcl as vulnerable but not by Vcz. The relativist Vcl therefore considers the 21 % of residents (in KMP) who use public taps as a cohort for policy targeting, whilst Vcz does not. The emphasis in policy formulation for this cohort would therefore be geared more towards *‘preventing poverty’* rather than *‘reducing poverty’*.

With access to five major dams, it is not surprising that in the Western Cape, the vast majority of people have access to a safe water supply. However, the problem confronted is one of accessibility. In KMP over a fifth of residents use public taps for their water requirements. Whilst this fills the gap for those without any direct access to water, public taps require regular maintenance and are also highly inefficient with regular water loss through leakages and wastage. Vcl measure also captures public taps as a vulnerable category, making it a potential target for policy consideration.

According to table 7.9, nearly a quarter of households in KMP fall into the lowest income band (i.e 0 – R400), which interestingly represents the largest cohort from amongst all the other income categories. Furthermore, appreciable stacking exists in categories with rank scores of 3 and 4, with aggregate clustering around 40 %. When income patterns for KMP are compared with the surrounding area (i.e. Cape Town) and the WC province, an interesting picture emerge. In terms the lowest income band (i.e. 0 – R 400), KMP have the highest headcount ratio, with estimates exceeding CT and the WC by over 50%. At the top end of the income distribution (i.e. R 3200 >), KMP has a headcount ratio of just

under 25 %, whilst the headcount ratio for greater CT is over 40 %. This implies that for the top end of the income distribution, KMP has an income configuration of 75 % below the surrounding area (i.e. greater CT) norm. Residents in KMP are therefore predominantly middle –lower to low income earners compared to residents in greater CT, who are more middle to upper – middle income earners, with admittedly some existence of low income earners as well.

Table 7.9 Household Income (Census 2001)

Monthly	Rank	Vcz	Vcl	KMP %	City of Cape Town %	Western Cape %	South Africa %
0 – 400 R	Rank 6	1	1	24.3	16.1	15.2	31.6
400 – 800 R	Rank 5	0.8	0.64	11.7	8.5	10.6	17.8
800 – 1600 R	Rank 4	0.6	0.43	19.7	14.4	16.7	16.3
1600 – 3200 R	Rank 3	0.4	0.25	19.6	16.8	18.4	13.2
3200 – 6400 R	Rank 2	0.2	0.1	14.9	17.1	16.2	9.0
6400 > R	Rank 1	0	0	9.8	27.1	23.0	12.1

Key:

R = Rands

Excluding Institutions

Carter and May (1999) for example finds that households at the bottom of the income distribution have access to a variety of claiming systems, including grants from the state, agriculture from one's own production and remittances from family members. The spending power of households is therefore usually higher than figures for household income would suggest (See Klasen, 2000). This intimates that household expenditure is a more reliable proxy of actual household consumption than the income variable⁶⁷. Nevertheless, despite noting these shortcomings, income estimates provide a rough (albeit imprecise) picture of potential purchasing power of households and their relative position on the income chain. Furthermore, according to Qizilbash (2002) household income is used in policy where the focus is on low-income households.

In terms of the traditional methodology for measuring poverty, a poverty line is constructed, which separates the poor from the non – poor. Klasen (2000) use a poverty line constructed to include 40 % of the worse – off households. For KMP, rank 5 comes the closest to representing such a poverty line (approx. 36 %), which has a cut-off at the R 800 income mark for a household⁶⁸. In terms of the criteria sketched above, 36 % of households in KMP would be classified as poor (i.e. fall below the R800 poverty line) compared to about 25 % in greater CT and the WC⁶⁹. These headcount ratios are significantly more than those produced by the fuzzy poverty measures. What we can

⁶⁷ Unfortunately lack of expenditure data prevents us from empirically corroborating this conclusion.

⁶⁸ For KMP, Rank 6 + rank 5 = 24.3 % + 11.7 % = 36 %.

⁶⁹ These figures are arrived at by adding ranks 5 and 6.

gather is that the set of poor are different between these approaches. In terms of the income/ expenditure approach, the fuzzy set of core poverty resembles more those households who are extremely impoverished and fall below a severe poverty line, which is usually constructed half-way down from the poverty line (poverty line for KMP = R 800). The criteria of being classified as core – poor according to the fuzzy approach are therefore more stringent than the income / expenditure approach.

A further difference relates to the manner of appraisal whereby the Vcz fuzzy measure captures a rank score of 5 as an extremely vulnerable category whilst according to the income / expenditure approach, its classified as poor. The defining criteria between these approaches therefore is that according to the income / expenditure approach, poverty is seen as absolute, where one falls either above or below a poverty line. The fuzzy approach acknowledges that a measure of imprecision and vagueness must be incorporated into measuring poverty. Imprecision and vagueness is seen here as dealing with the complexity of a natural phenomenon such as poverty, with exactness in this regard considered to be artificial and forced (Novak, 1989).

7. 5.1 SUMMARY OF CORE – POVERTY INDICATORS

KMP achieves a higher headcount core poverty ratio than both Cape Town and the Western Cape on almost all of the above deprivation indicators. The data also informs us that the indicators of deprivation that need the most attention relative to the others are *housing, unemployment and low incomes*.

Comparing the performance of the two fuzzy measures, a number of important observations can be made. The usefulness of using both Vcl and Vcz permits one to test the robustness of the results, with the different approaches used to calculate fuzzy scores making them particularly appealing. A result will, therefore, be more reliable where for example both fuzzy measures pick up a category as vulnerable. However, on the whole, Vcz consistently presents a more accurate picture of deprivation than Vcl, although some exceptions (e.g. main water supply) notably exist. Furthermore, whilst the rationale of how the Vcl fuzzy measure works might be largely sound, the results from tables 7.3, 7.4 7.5, 7.6 and 7.9 suggest that this measure's emphasis on relativity alone obscures potentially useful information from being picked up⁷⁰. A potential way to address the inherent absoluteness of Vcz and relativity of Vcl is to take the aggregate of these

⁷⁰ The logic of Vcl stems from giving importance to indicators associated with less frequent symptoms of poverty. People therefore have a stronger feeling of deprivation when they do not own a very widespread good. Thus the more a household falls short of the prevailing lifestyle, the more it considers itself to be poor.

fuzzy measures and arrive at an *adjusted* fuzzy measure, with features of both *absoluteness* and *relativeness* present.

7.5.2 AGGREGATE DEPRIVATION

The usefulness of computing a ratio for aggregate scores for the above indicators permit one to identify a need for the kind of policies required for socio-economic development in KMP. Three dimensions / functionings can be identified. These are *household and services, socio-economic, and monetary dimensions*⁷¹.

Since the above aggregate index values represent ordinal scores, they do not have any particular meaning in the absolute sense and no criteria exist to decide whether the index measures good or bad living conditions⁷². Thus only comparisons can be usefully made. Nevertheless, the intensity of deprivation can be summarised according to the membership degrees (μ) where higher values of μ denotes higher average deprivation.

Table 7.10 Aggregate Deprivation Index Scores for Dimensions / Functionings and GPI

	Housing & Services Dimension	Socio - Economic Dimension	Monetary Dimension	Global Poverty Index
KMP	4.20	28.61	6.33	6.4
City of Cape Town	3.75	19.60	4.2	5.48
Western Cape	4.12	20.74	5.73	6.07
South Africa	13.56	32.62	17.93	16.57

The Global Poverty Index (GPI) represents the aggregate score of all three dimensions listed in the table above (See also table 7.1). Thus KMP’s GPI figure (6.4) is higher in absolute terms than both CT (5.48) and WC (6.07), implying more overall deprivation present in KMP than in CT and WC. It is also noticeable that KMP has also higher index values than both CT and WC on all three dimensions. The difference in deprivation is especially marked for the S – E dimension, with deprivation average for KMP being 40 % higher than both CT and WC.

However, the GPI figure for South Africa is the highest at 16.57, representing 250 % more overall deprivation than any of the other areas. After examining the various

⁷¹ Stats SA (2000) uses two indices, HH Infrastructure Index and HH Circumstance Index to describe poverty. The household and services and socio-economic dimensions can be said to correspond to these two indices.
⁷² The decomposed index by selected subgroups / indicators (see 1st part of results section) provides more specific information about what the living conditions are like.

dimensions, it becomes clear that this high GPI figure is mainly attributable to the high index score for the S-E dimension (32.62). However, the level of deprivation for the Socio – Economic (S-E) dimension appear to pose a particular problem for all of the above areas, with each area registering their highest level of deprivation for this dimension. KMP, for example, registers an S-E index score of 28.61, which is only marginally lower than the country-wide figure of 32.62, and 4 times larger than its deprivation achievement on any of the other functionings.

KMP also achieves its lowest deprivation score for the H-S (4.2) functioning. Despite this low index score, a considerable amount of variability exists amongst the achievement on the various component indicators. For example, over 30 % of KMP who live in shacks, can be considered core poor on the '*type of dwelling*' indicator, yet this cohort is not picked up by the H-S index because shack dwellers are picked up as extremely vulnerable by Vcl and Vcz, and not as core poor. The lower H-S index value therefore creates the impression that for KMP, the H-S dimension requires relatively less policy attention than the other two socio – economic dimensions.

It is quite possible that the above index values, hence deprivation levels, could be unduly influenced by the weighting measure used. Subsequently an additional two weighting measures were selected and applied to the relevant indicators, to test for robustness of the *frequency-based* weighting scheme used above.

Our results are listed in appendix IV. According to *weighting measure 2*, the GPI figure for the WC is notably higher than that for KMP (table 5). This result is contrary to the findings that uses the frequency-based weighting measure. However, when the *water services* indicator (outlier) is excluded from the make-up of GPI, the picture of overall deprivation changes quite radically. According to the new adjusted GPI figures (appendix IV), deprivation has increased by more than four times for CT and more than five times for KMP (table 6). Deprivation has similarly increased for WC, but by considerably less (240 %). This little exercise demonstrates that the shortcoming of *weighting measure two* is its failure to factor in an adjustment for outlying indicator values (e.g. water services), resulting in the picture of overall deprivation being artificially exaggerated or suppressed (as in the above case). Nevertheless, once the outlier is removed, the results from using both weighting measures two and three are at least qualitatively similar to that from using the frequency-based method. There is, therefore, some evidence to support Filipone *et al's* (2001) claim that the various weighting measures are robust and thus do not have an undue influence on the results of the aggregation process. What our results nevertheless

suggest is the superiority and intuitively appealing nature of the frequency-based weighting measure over the other two measures sampled.

Table 7.11 Pearson Correlation of Dimensions and Global Poverty Index				
	Household - Services	Socio Economic	Monetary	Index
Household - Services	1	0.788	0.995	0.999
Socio Economic	0.788	1	0.83	0.805
Monetary	0.995	0.833	1	0.997
Index	0.999	0.805	0.997	1

Table 7.11 presents the Pearson correlation between the various indices. A strong correlation relationship exists amongst all the indices, with 0.79 between S-E and H-S dimensions, being the lowest reported. The strong correlation between all of the above indices means that most of those classified as poor suffer from multiple functioning deprivations.

7.5.3 EXTREME VULNERABILITY

Table 7.12 Average Extreme Vulnerability Index Scores for Dimensions / Functionings and GPI				
	Housing & Services Dimension	Socio - Economic Dimension	Monetary Dimension	GPI
KMP	7.53	15.79	11.70	9.49
City of Cape Town	5.51	13.31	8.50	7.20
Western Cape	6.64	18.5	10.6	9.03
South Africa	12.71	16.06	10.31	14.06

Table 7.12 displays the average extreme vulnerability scores based on the Vcz fuzzy measure for the various dimensions (including GPI)⁷³. More extreme vulnerability is present in the S – E dimension than for any of the other dimensions. The WC (18.5) has the highest extreme vulnerability score on this dimension (i.e. S – E dimension), followed by SA (16.06) and then only KMP (15.79). For the Monetary dimension, KMP (11.7) displays the highest extreme vulnerability levels followed by the WC (10.6) and then SA (10.31). When these extreme vulnerability scores are compared with the deprivation indices from table 7.10, some useful insights emerge. On the whole, extreme vulnerability scores are larger than the deprivation scores – the difference being particularly marked amongst the H-S and Monetary dimensions. However for the S-E dimension, the deprivation scores are higher, particularly for KMP and SA, where deprivation is as much as 50 % higher than extreme vulnerability.

⁷³ Vcl is excluded because it fails to capture deprivation consistently.

The above results suggest that extreme vulnerability acts as an important subset of overall well-being and complements the deprivation situation present within the various areas. For KMP specifically, the extreme vulnerability within the monetary and H-S dimensions would not have been picked up if we were to just examine the deprivation figures alone.

7.5.4 HUMAN POVERTY VS INCOME POVERTY

We now compare *human poverty* with the *income poverty* within the fuzzy set theoretic framework. They are compared for both deprivation and extreme vulnerability cases. For the deprivation case (see table 7.13), when the two types of poverty are compared, income poverty achieves lower deprivation figures for all (except SA) of the areas, with the variability gap between human and income poverty being especially considerable for CT (i.e. at around 50 %). This result adds credence to Sen’s (1999) view that poverty within the income domain is less debilitating than that within the capabilities domain. Even when we take Overall GPI figures as an indicator of human poverty, income poverty still reflects lower levels of deprivation across all areas. Whilst we excluded income from our original measure of human poverty, overall GPI figures (which include income) are probably a more correct measure to use. Some like Klasen (2000) and Clark and Qizilbash (2003) incorporate the income indicator into their overall picture of human poverty whilst others like Chiaperro - Martinetti (2000) omit it since its importance is only relevant in a contingent way.

Table 7.13 Deprivation Index Scores for Human and Income Poverty

	Human Poverty (excl. Y)	Income Poverty	Overall GPI
KMP	6.91	6.33	6.4
Cape Town	6.07	4.2	5.48
Western Cape	6.64	5.73	6.07
South Africa	17.43	17.93	16.57

Another consideration for a developing country context like South Africa is the preference for expenditure over income as a proxy for capturing overall welfare. Whilst no reasonable claim can be made about what the expenditure scores for the various areas would have been, its deprivation scores would nevertheless have been lower than what has been reported for the monetary dimension. This suggests that the actual deprivation gap between human and income poverty would presumably be much higher than the reported figures in table 7.13.

Table 7.14 Extreme Vulnerability Index Scores for Human and Income Poverty

	Human Poverty (excl. Y)	Income Poverty	Overall GPI
KMP	9.23	11.7	9.49
Cape Town	7.04	8.5	7.2
Western Cape	8.83	10.6	9.03
South Africa	13.6	10.31	14.06

When income and human poverty are compared based on the extreme vulnerability case, a different picture from that of aggregate deprivation emerges. In all of the areas (except SA), income poverty exhibits higher reported extreme vulnerability scores than human poverty (incl. overall GPI) implying that income poverty picks up more extreme vulnerability than what human poverty does.

Using overall GPI figures as a point of reference, the above findings seem to indicate that income poverty under - estimates deprivation whilst its estimates for extreme vulnerability are over-reported.

7.6 POLICY IMPLICATIONS

A PDC summary report (1998) states that most sectors in the Western Cape will benefit more from income growth among the poor than they will from new income received by the rich. This implies that business growth in the Western Cape depends on reducing poverty and bringing the marginalized into the mainstream as economic participants. The analysis above demonstrates quite clearly that unemployment is a major problem in KMP, with nearly 45 % of the population out of work and unable to find any employment. Job creation should therefore be seen as a vital component of any IDP plan to tackle poverty in KMP. Public works projects, already being touted by central and provincial government as a remedy to absorb low-skilled unemployed people, might perhaps be suitable to an area like KMP, especially since infrastructure development is sorely needed. Good infrastructure also has supply side effects such as raising productivity and lowering costs, whilst also creating opportunities for investment and employment. An additional outcome of infrastructure development is that areas are created that are *habitable* and *dignified*. A further consideration, which is also important in the city’s IDP, is the need to create cohesive communities that are socially and economically integrated. It is noteworthy that many IDP processes are experiencing a lack of community participation in poor areas. The fragmentary nature of these communities makes mobilisation of the community exceedingly difficult. In terms of

Clark's ATG, *community participation* and *living in dignity* are important non-material capabilities that make up a good life.

The low core poverty score on the housing indicator does not obscure the fact that the lack of adequate housing is a serious concern in KMP. As part of the IDP process, the Peoples Housing Process has been established to enable the poor to access subsidies. However, the lack of community involvement in the housing consultation process has prevented many from knowing that these subsidies exist.

According to the IDP, people with a maximum of grade 6 education are considered to be functionally illiterate. For KMP, this figure stands at 21%, which represents 168 000 people⁷⁴. The IDP stretch target for illiteracy rates for the City of Cape Town is under 5 % by the year 2020. However the fuzzy set poverty measures (table 7.2) depict a more nuanced picture of what kind of target setting / policy response is required. For example Vcl picks up those with 'some secondary education', which amounts to nearly half of KMP, as being very close to extreme vulnerability. This implies that according to the Vcl fuzzy measure, this cohort deserves some form of policy attention, especially since only 4 % of KMP residents have gone beyond grade 12 education. The policy attention required by this cohort would however be different from the cohort classified as functionally illiterate by the IDP.

The results from the aggregation indices (table 7.10) show that the socio- economic functioning in KMP requires the most serious attention. The implication is quite considerable especially since urban renewal initiatives have not been informed by socio-economic and spatial economy trends thus far (PDC Annual Report, 2001-02). Interestingly, KMP has more deprivation on the other two dimensions (i.e. H-S & Monetary) than both CT and WC, implying below average performance on these dimensions. This suggests that due attention should also be given to the S-E and Monetary functionings. Already there is a concern about the over-emphasis on one policy – instrument in some IDP plans (PDC Annual Report, 2001-02). The aggregation results for KMP make it clear that if such an approach is applied to KMP, it is bound to end in failure.

The theoretical framework adopted also influences policy response. Our results demonstrate that income poverty under-estimates deprivation whilst its estimates for extreme vulnerability are over – reported. Admittedly, these results are unadjusted for household size, which might be a cause of bias, despite it being a policy focus.

⁷⁴ The illiteracy rate for the City of Cape Town is 16% (refer to table 7.2: educational attainment).

Nevertheless, these results imply that a solely income-based poverty focus presents a partial and an incomplete picture of well-being. The IDP, however, adopts a basic needs framework. Already certain problems from using this approach are beginning to emerge. For example, a PDC (2002) newsletter states that a particular emphasis has been placed on infrastructural provision and related services in many completed IDPs, whilst economic and social planning has been sadly neglected. The results from having tested the fuzzy set methodology above, suggest that policy shortcomings currently coming through in the IDP process can be remedied by adopting a basic capabilities paradigm, where the multidimensional nature of well-being, which views poverty in a 'broad and opaque way', has much to offer in terms of capturing the vagueness implicit in deprivation indicators.

A number of limitations to this study must however be acknowledged. Data limitations prevented the inclusion of important well-being indicators such as health services and safety and security. The latter is of particular relevance given the importance being placed on policy – instruments such as law enforcement and business improvement districts in many IDPs. Furthermore, non-material goods are omitted despite their importance within a basic capabilities paradigm. In the absence of information on household expenditure, unadjusted household income was used as an imprecise proxy for *utilitarian poverty*. Applying the fuzzy set methodology within a poverty framework is still relatively new, thus there are still several outstanding issues that have not yet been properly addressed. For example no sound theoretical basis for the membership functions and the weighting structures selected, exists. The ordinal scores of the aggregate indices also have no clear interpretive meaning - one is, therefore, not sure to what extent someone belongs or does not belong to the set of poor. Finally, the fuzzy measures are constrained by their inherent *absoluteness* or *relativity*, making it sometimes difficult to evaluate the accuracy with which they capture deprivation.

CHAPTER 8

CONCLUSION

This enquiry began by locating human poverty within its historical context by examining the role local government played in this process. Chapter 2 examined the RDP and GEAR, government's two socio-economic programmes of reconstruction and development. The RDP specifically, presents an approach (i.e. Basic Needs) to address poverty, which has found its way into the new local government model. In Chapter 3 we proceeded to introduce the new local government model. The new laws pertaining to Developmental Local Government, make it quite clear that the state considers the nature of governance to be an important dimension of development. In Chapter 4 we examined the various theories of well-being, starting with the traditionally popular Utilitarian theory. These theories have a direct bearing on how starvation, exploitation and inequity are judged and how they could be addressed. In Chapter 5 we provided a critique of the received methodologies employed in measuring poverty. Fuzzy –set measures are proposed as a potential answer to some of the methodological problems that beset poverty studies. In Chapter 6 we introduced the Khayelitsha / Mitchell's Plain magisterial district and provided some demographic information about the area. The main principles of the Cape Town IDP were also reviewed. Finally, in Chapter 7, we applied the fuzzy –set methodology to the KMP magisterial district, using the Census 2001 dataset.

The capability failure existing amongst people in large parts of South Africa today make it quite clear that transforming the structural edifice of Apartheid and its institutional policies requires a much more sophisticated approach to development policy than the basic needs approach currently adopted by DLG in its IDP plans. The capabilities approach puts the focus of development on people and their ability to function, rather than on goods and services, which is the basic needs approach. As it stands, Clark's Augmented Theory of the Good (ATG) makes a worthwhile contribution towards making Sen's capabilities approach more workable, by providing a provisional list of important capabilities that make up a good life. All of our deprivation indicators in one way or another, form part of Clark's list of the important capabilities necessary for good human functioning. However, at this stage, a lack of information on important non-material capabilities in South Africa (e.g. personal autonomy, self-respect etc), make it very difficult to get a true sense of the functioning failure current in the country.

Despite these practical shortcomings, the material aspect of capability deprivation in KMP is nevertheless notable. The various deprivation indices convey a very clear message. People in KMP are unemployed, poorly housed and possess low incomes. All three items form part of Clark's ATG. Thus addressing the capability failure of these functionings will improve the chances of achieving a good life for the people of KMP. If the extended public works programme is adopted, which includes a housing component, a sizeable proportion of low-skilled unemployed people in KMP will be absorbed into the formal labour market, creating much needed jobs and generating income at the same time. The non-material capabilities that form part of Clark's ATG, such as creating a habitable and dignified living space, will also be well served by infrastructure development resulting from the public works project. However this will probably be difficult to quantify.

Nussbaum believes that the only way to arrive at a universal list of functional capabilities is if the items on such a list are specified in a vague and non-specific manner. In this research, we have tested a methodology (i.e. fuzzy – set methodology) which specifically has the qualities to measure deprivation indicators in exactly such a 'vague and opaque' way. It is worth emphasising some of the key points from using this fuzzy – set methodology.

In a surprising result, the absolute V_{cz} measure provided a better interpretation of deprivation indices than the relative V_{cl} measure, although some notable exceptions did exist. One wonders whether it's at all advisable to opt for one or the other fuzzy – set measure rather than adopting both for the sake of robustness. It is, however, suggested, that to address the inherent absoluteness of the V_{cz} measure and the relativeness of the V_{cl} measure, one should estimate the aggregate of these measures and arrive at an *adjusted fuzzy measure*, reflecting features of both the absolute and the relative.

Our empirical results demonstrate that despite some evidence to suggest that weighting schemes do not have an undue influence on the results and aggregation process, the frequency-based weighting scheme is still the best weighting scheme available even though no theoretical justification for these various weighting schemes exists. Our results also show that extreme vulnerability acts as an important subset of overall well-being and complements the deprivation situation in various areas. For KMP specifically, the extreme vulnerability within the monetary and H – S dimensions would not have been exposed if the deprivation figures alone had been examined. Our results also support Sen's view, that poverty within the income domain is less debilitating than within the

capabilities domain. More specifically, income poverty under – estimated deprivation whilst its estimates for extreme vulnerability went over – reported.

Applying the fuzzy – set methodology within a poverty framework is a relatively new departure. Some outstanding issues have thus not been properly addressed. For example there is no theoretical basis for membership functions and selecting weighting structures. Also ordinal scores of aggregate indices have no interpretive meaning – one is therefore not sure to what extent someone belongs to or does not belong to the set of poor. Lastly, fuzzy measures are constrained by their inherent absoluteness or relatively, making it sometimes difficult to evaluate how accurately they capture deprivation.

Currently, public participation (which is one of the core principles of DLG) has largely been neglected in the formulation of IDPs and the execution of core municipal activities. This neglect means that potentially useful living standards information is not reaching the architects of the IDPs. The small area estimates that this study has provided could potentially be used to complement public participation and provide quantitatively useful information for those designing an IDP plan for the KMP area. In this regard, further study is required on some of the important functional capabilities that are not so easily available from a Census dataset. Furthermore, a more comprehensive examination needs to be carried out, which tests the variance in the picture of deprivation between an expenditure-based poverty measure and that of a total global poverty measure of deprivation.

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APPENDICES

APPENDIX I

Below are various forms that the membership function can take. Each function operates according to a formula, which is stipulated alongside the graph.

Figure 1.1

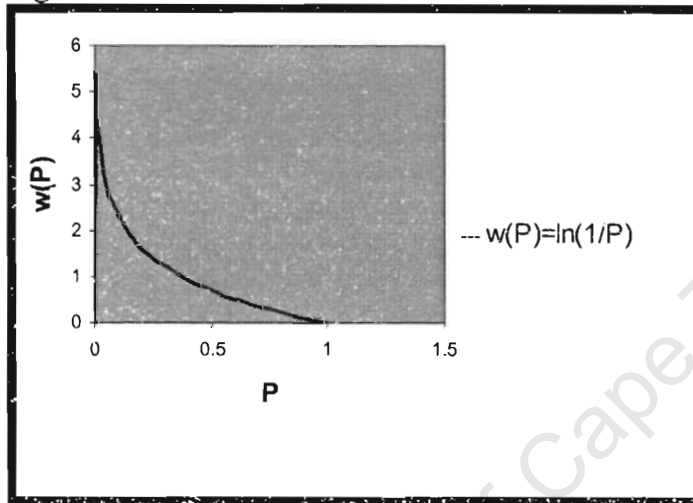


Figure 1.2

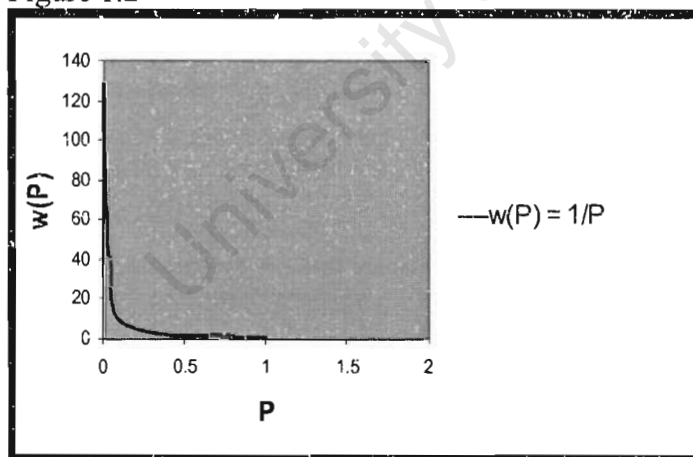


Figure 1.3

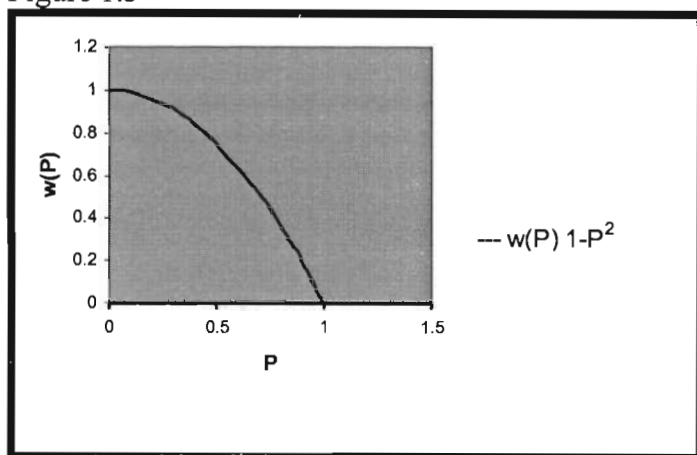
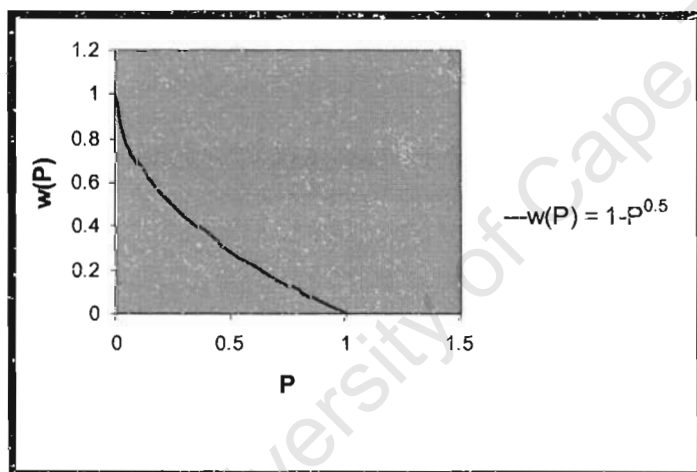


Figure 1.4



APPENDIX II

Areas that constitute the K-MP magisterial district are: Gugulethu, Nyanga, Macassar, Old CrossRoads, Lower Cross Roads, Brown's Farm, Weltevreden Valley, Ikwezi Park, Khayelitsha, Bongweni, Lentegour, Woodlands, Beacon Valley, Eastridge, Tafelsig, Rocklands, Westridge, Strandfontein, Griffiths Mxenge, Harare (Census, 2001).

APPENDIX III

Table 1. Average Membership functions and corresponding weights

		KMP		City of Cape Town		Western Cape		South Africa	
Dimension / Functionings	Poverty Symptoms	Avge M.F (%)	Weights	Avge M.F (%)	Weights	Avge M.F (%)	Weights	Avge M.F (%)	Weights
	X _j	U _j	w _j	U _j	w _j	U _j	w _j	U _j	w _j
HOUSEHOLD & SERVICES	Dwelling	1.83	4	1.95	3.94	2.22	3.8	14.84	1.9
	Water Supply	0.1	6.9	0.11	6.8	0.37	5.6	8.19	2.5
	Sanitation	9.7	2.33	7.25	2.62	7.68	2.57	13.39	2
	Refuse	2.9	5.84	1.39	4.28	1.45	4.23	8.53	2.6
	No. of Rooms	44	0.82	31	1.2	28	1.27	43	0.83
SOCIO - ECONOMIC	Work/ Jobs	34.9	1.05	26.13	1.34	27.47	1.29	33.41	1.1
	Schooling	24	1.43	15	1.9	16	1.83	32	1.4
MONETARY	Income	6.33	2.76	4.2	3.17	5.73	2.86	17.93	1.72

Table 2. Average Deprivation Index figures for functionings and Global Poverty Measure

	Housing & Services Dimension	Socio - Economic Dimension	GPI (S-E + H -S)	Monetary Indicator	OVERALL GPI
KMP	4.20	28.61	6.91	6.33	6.4
City of Cape Town	3.75	19.60	6.07	4.2	5.48
Western Cape	4.12	20.74	6.64	5.73	6.07
South Africa	13.56	32.62	17.43	17.93	16.57

Table 3. Correlation between different dimensions and global index of poverty.

	Household - Services	Socio Economic	Monetary	Index
Household - Services	1.000	0.788	0.995	0.999
Socio Economic	0.788	1.000	0.830	0.805
Monetary	0.995	0.833	1.000	0.997
Index	0.999	0.805	0.997	1.000

APPENDIX IV

Weighting No. 2:
 $W(P) = 1/P ; P = 1/ U_j$

Table 4.

		KMP		City of Cape Town		Western Cape		South Africa	
Dimension / Functionings	Poverty Symptoms	Avge M.F (%)	Weights	Avge M.F (%)	Weights	Avge M.F (%)	Weights	Avge M.F (%)	Weights
	X_i	U_j	w_j	U_j	w_j	U_j	w_j	U_j	w_j
HOUSEHOLD & SERVICES	Dwelling	1.83	54.64	1.95	51.28	2.22	45.05	14.84	6.74
	Water Supply	0.1	1000.00	0.11	909.09	0.37	270.27	8.19	12.21
	Sanitation	9.7	10.31	7.25	13.79	7.68	13.02	13.39	7.47
	Refuse	2.9	34.48	1.39	71.94	1.45	68.97	8.53	11.72
	No. of Rooms	44	2.27	31	3.23	28	3.57	43	2.33
SOCIO - ECONOMIC	Work/ Jobs	34.9	2.87	26.13	3.83	27.47	3.64	33.41	2.99
	Schooling	24	4.17	15	6.67	16	6.25	32	3.13
MONETARY	Income	6.33	15.80	4.2	23.81	5.73	17.45	17.93	5.58

Table 5. Avge Deprivation Index Scores of functionings for Weighting Measure 2

	Housing & Services Dimension	Socio - Economic Dimension	Global Poverty Indicator (S-E & H - S)	Monetary Dimension	Global Poverty Index
KMP	0.45	28.44	0.63	6.33	0.71
City of Cape Town	0.48	19.06	0.66	4.2	0.74
Western Cape	1.25	20.22	1.7	5.73	1.87
South Africa	12.36	32.69	15.03	17.93	15.34

Table 6. Deprivation Index Scores for Weighting Measure 2 when H – S dimension and GPI

	Housing & Services Dimension	Housing & Services Dimension (excl. Water Services)	Global Poverty Index	GPI (Excl. Water Services)
KMP	0.45	3.93	0.71	5.62
City of Cape Town	0.48	2.85	0.74	4.01
Western Cape	1.25	3.06	1.87	4.43
South Africa	12.36	14.16	15.34	17.52

adjusted

Weighting No. 3:

$$W(P) = 1 - P$$

$$P = 1 - U_j$$

Table 7. Average Membership functions and weights structure for weighting structure

		KMP		City of Cape Town		Western Cape		South Africa	
Dimension / Functionings	Poverty Symptoms	Avg M.F (%)	Weights	Avg M.F (%)	Weights	Avg M.F (%)	Weights	Avg M.F (%)	Weights
	X _j	U _j	w _j	U _j	w _j	U _j	w _j	U _j	w _j
HOUSEHOLD & SERVICES	Dwelling	1.83	0.982	1.95	0.981	2.22	0.0674	14.84	0.9326
	Water Supply	0.1	0.999	0.11	0.999	0.37	0.1221	8.19	0.8779
	Sanitation	9.7	0.903	7.25	0.928	7.68	0.0747	13.39	0.9253
	Refuse	2.9	0.971	1.39	0.986	1.45	0.1172	8.53	0.8828
	No. of Rooms	44	0.560	31	0.690	28	0.0233	43	0.9767
SOCIO - ECONOMIC	Work/ Jobs	34.9	0.651	26.13	0.739	27.47	0.0299	33.41	0.9701
	Schooling	24	0.760	15	0.850	16	0.0313	32	0.9688
MONETARY	Income	6.33	0.937	4.2	0.958	5.73	0.0558	17.93	0.9442

Table 8. Avge. Deprivation Index Scores of functionings for Weighting Measure 3

	Housing & Services Dimension	Socio - Economic Dimension	Global Poverty Indicator (H- S + S - E)	Monetary Dimension	Global Poverty Index
KMP	8.63	29.03	13.57	6.33	12.57
City of Cape Town	6.87	20.18	10.3	4.2	9.48
Western Cape	3.93	21.61	6.25	5.73	6.19
South Africa	18.05	32.71	22.4	17.93	21.83

APPENDIX V

SQUARED POVERTY GAP MEASURE

The Squared Poverty Gap measure fulfils the three descriptors of poverty. This measure is merely an adaptation of the original PG measure where more weight is given to observations that fall well below the poverty line⁷⁵. This is achieved through the squaring of the poverty gap measure (World Bank, 2003). In summarised form, the measure can be represented as

$$P_0 = \frac{1}{N} \sum_{i=1}^N \left(\frac{G_n}{z}\right)^2$$

G_n = poverty gap
 Z = poverty line

This measure however is little used in the literature. A possible reason for this is provided by the World Bank (2003), which states that the measure is not easy to interpret, and also lacks intuitive appeal.

SEN – SHORROCKS – THON (SST) INDEX

This index can be defined as

$$P_{sst} = H.PG(1 + G)$$

H – Headcount Index
PG – Poverty Gap Ratio
G – Gini coefficient of the poverty gap ratios

The above index, similar to the original Sen Index, is a product of the H index, PG measure and a term which measures the Gini coefficient of the poverty gap ratios. The World Bank (2003) mentions that one of the strengths of the SST index is that it is able to give a good sense of change in poverty over time. This is because the index can be decomposed into

$$\Delta \ln P_{sst} = \Delta \ln H + \Delta \ln PG + \Delta \ln(1 + G)$$

which can be interpreted as % change in SST index = % change in H index = % change in the PG ratio (among poor) + % change in (1 + Gini coefficient of poverty gaps G). In other words the above disaggregation attempts to answer 3 questions: These are: (i.) Are there more poor? (ii.) Are the poor poorer? and (iii.) Is there higher inequality amongst the poor? (World Bank, 2003)

⁷⁵ Weights are allocated in a proportionate manner. Thus a PG of 50 % of the poverty line is given a weighting of 50 % etc. (World Bank, 2003).

UNMET BASIC NEEDS

This index was developed by May, Carter and Posel (1995). The index is based on all households having access to basic needs such as shelter, sanitation, energy and water. Households are classified as poor / non-poor through enquiring from them what products they have consumed and whether these have satisfied their basic needs. A household is therefore classified as poor if all or some of the basic needs are not met (Ngwane *et al*, 2001).

HUMAN DEVELOPMENT INDEX (HDI)

The HDI was developed by the UNDP as a measure of human poverty. It sees the goal of development as ensuring people live a long, informed and comfortable life. The HDI index is comprised of 3 dimensions. These are (i.) longevity, (ii.) knowledge and (iii.) decent standard of living (UNDP, 1997). Ngwane *et al* (1997) states that the HDI provides a comparative measure of human poverty. Thus the HDI is useful in highlighting disparities between large homogeneous groups such as between countries or geographical areas (May *et al*, 1995).

The following index tabulates the criteria that are used to assess countries:

$HDI < 0.5 \Rightarrow$ low development

$0.5 < HDI < 0.8 \Rightarrow$ medium development

$HDI > 0.8 \Rightarrow$ high development

However the problem with the HDI is that it is at a very high level of aggregation. Thus as May *et al* (1995) states the index is very difficult to translate into policy guidelines or to use as a household index. Although the HDI draws on both the basic needs and capabilities school, the index nevertheless has a very weak theoretical foundation.

CAPABILITIES POVERTY MEASURE (CPM)

The CPM Index comprises multiple indicators (representing basic capabilities) which in summary reflects the proportion of the population with capability shortfall. The dimensions of the CPM include: (i.) living a healthy and well-nourished life, (ii.) capability of safe and healthy reproduction and (iii.) being literate and knowledgeable.

The CPM was in fact designed to address the shortcomings of the HDI (Ngwane *et al*, 2001). While the HDI includes income (via the standard of living dimension), the CPM does not. The reason for this omission relates to well established problems with what the income variable is actually supposed to represent. As it stands the CPM provides a framework that could be used to analyse poverty within a multi-dimensional approach. However similar to the unmet Basic Needs model it still needs some work before it can be made fully implementable.